COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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Collective Bargaining Not in Danger

HAVE the bituminous coal operators abandoned collective bargaining? The United Mine Workers are telling the public that unless the coal producers in the Central Competitive Field meet with them in joint conference in an effort to agree on a scale of wages for the next year or two years, collective bargaining will have been discarded by the owners. The miners profess to desire a conference but they have set up an impossible set of "demands," of which the most notorious is the six-hour day and five-day week. The miners have declared themselves against any wage reduction. Subject to a referendum they have gone on record in favor of a strike if their demands have not been met by April 1.

What is collective bargaining? Certainly not what the miners propose, a form which has been aptly characterized as "collective threatening." Each and every group—southern Ohio, eastern Ohio, Pittsburgh, Illinois and Indiana—has in turn stated its willingness to meet collectively the representatives of their men, the officials of the United Mine Workers. This is no sudden onslaught against the miners' International union. It is a condition brought on by the men themselves, for it will be remembered that in the summer of 1920 they refused to abide by the decision of the President's Bituminous Coal Commission when they struck for advances in wages over those given them by that commission. After a series of local strikes the President on Aug. 10 asked the operators and men to get together and make whatever adjustments were necessary. A meeting of the Central field producers and the union officials was held in Cleveland, at which no decision was reached and following which, on Aug. 19, John L. Lewis, president of the United Mine Workers, telegraphed President Wilson announcing that they had not been able to reach an interstate settlement, but that "While this circumstance may be regarded as unfortunate, I am of the opinion that there is no necessity for any public apprehension. There are reasonable grounds for the belief that the questions at issue between the operators and miners may yet be harmonized through the instrumentality of agreements which may be consummated in the individual coal-producing districts without inconvenience to the public."

These words exhibit no grief over the lack of decision from the Central Competitive Field. Mr. Lewis did not at that time say that the operators were refusing to bargain collectively, because he had in prospect the increase in wages that the men were demanding. He was quite willing to go back to the separate fields then because that was a way to get what he wanted. There is an old saying about "The Devil was sick, the Devil a monk would be," etc.

Nor does the break-up of the Central Competitive Field—for there will be no interstate conference this year—spell ruin to the miners' union, although it will remove it as a large menace to the peace and prosperity of the coal industry. There always have been the outlying fields with which the union has dealt, and now all will be outlying fields. The Illinois operators state that they "for the past three months have stood ready to negotiate a wage scale with their own workmen." They do not believe, however, "that the growing tendency of organized labor, not only in coal but in many other industries, to negotiate in increasingly larger groups has justified itself." In other words, since the United Mine Workers has followed the blind policy of standing in the way of economic readjustment and deflation, it is necessary that the employers refuse recognition of the traditional power of that organization and work out the required downward readjustments piecemeal.

No, it is not collective bargaining that is in danger; it is the jobs of such as Lewis, Brophy, Howat and Farrington. They had the choice in 1912 of meeting with the operators to discuss a reduction in advance of contract termination, just as the operators had met them the previous year when they wanted more wages, but the union stood pat, and now prepares to stand patter still. The officials of the union undoubtedly felt that they would be fired if they should recommend a reduction, and now they will have to go because they did not do it and have not the courage to say the time has come.

If the bituminous coal operators do not now effectively clean house in the miners' union by refusing the check-off, they will have missed the chance of a lifetime.

Smoothing the Bumps in Demand

BUSINESS cycles are not mystic symbols of an occult science. Business has its ups and downs—always has had—but not necessarily must it always have them. So far, what we have done as a people is to stand by and record the passing of the cycles—the periods of prosperity, inflation, the burst of the bubble, depression and deflation and the painful return to good times.

Coal has felt these ups and downs, has suffered the full shock of every bump. Therefore coal is interested in the prospect of leveling the tops off the peaks of demand, in order to fill the valleys of extremely low demand.

It is true that one must look outside the coal trade for causes contributing to major business fluctuations, for the coal industry is affected by but does not cause such variations. Possibly no other industry is so strongly influenced by depression and abounding prosperity as bituminous coal. Producers of bituminous coal are the most cheerful optimists in this country, as they live in continual hope of peak demand, for in ordinary times there are so many of them that there is no profit save for the exceptional few. Were the

hope of temporary abnormal market and profit taken away and in its stead established a more nearly continuous rate of demand, the fittest who survived would have the field and mushroom growths be eliminated.

Such a condition would approach the unattainable ideal, but a Special Committee of the President's Conference on Unemployment was last week appointed and has already launched into a study of the fundamentals of unemployment and the control of the business cycle. The committee is to make a report in six months. Owen D. Young, vice-president of the General Electric Co., New York, was named chairman; Joseph H. Defrees, president of the Chamber of Commerce of the United States; Clarence Mott Woolley, president of the American Radiator Co., New York; Matthew Woll, vice-president of the American Federation of Labor, and Miss Mary Van Kleeck, Russell Sage Foundation, New York, are the other members of the committee. Edward Eyre Hunt, secretary of the President's Conference on Unemployment, was appointed secretary of the new committee, and Wesley C. Mitchell, of New York, field director of the study.

In this connection it is proper to note that Senator Kenyon had a business-cycle bill before Congress and it provoked so much adverse comment that he permitted it to go back to the committee, where it will sleep. The Senator proposed in his bill to regulate not private business but public expenditures in a way to supplement private work, taking, in other words, government expenditures off the peak and putting them in the valleys. But Congress is very jealous of its prerogative to indicate when and where expenditures of public funds are to be made, and refuses to vest even limited control over these funds in the Executive, as provided by Senator Kenyon's bill.

Senator Kenyon believes the President would handle the matter with sufficient judgment to prevent any of the dire results prophesied by opponents of the bill. He pointed out that Canada has gone much further than this bill proposes. The French Government attaches enough importance to the matter to maintain a commission for the regulation of public works in relation to employment in other industries. Even before the war Great Britain had a highway fund which was to be expended during periods of unemployment only. Since the war Great Britain has greatly expanded this policy. The Belgian Government has what is known as a national crisis fund, to be expended on public works during periods of unemployment. Switzerland has a traditional policy of subsidizing local public works. These and other examples were cited by the Iowa Senator in support of his bill, but, despite the admitted strength of his arguments, little sympathy for the proposal was aroused and it is admitted that a different type of proposition must be evolved before there is any hope of obtaining legislation of this character.

It is understood that the administration was behind the Kenyon bill and now that it stands defeated has not dropped the subject but seeks education of Congress and the public, such as will come from the study of this special committee on control of business cycles, before pushing harder for national legislation.

WHEN LAST SEEN business was still turning the corner."—*Brookville Record.*

SPRING IS NOW only about four tons away.—*Gloversville Leader-Republican.*

Advocacy of Triple Shift

IN DISCUSSING Mr. Ashmead's paper on the possible advantages of the multiple shift Mr. Kniffin found two conditions under which it might succeed. He stated that metal mills were divided into units and that a three-unit mill would require three times as many men as a one-unit mill and put out three times the product. He declared that each unit was entirely self-contained, the men in one unit not working on the machines in another unit. It would seem that Mr. Kniffin should be conversant with the facts, having been a metal-mining engineer at a property adjoining the Santa Rita copper field.

But it would nevertheless seem pertinent to point out that the men in one unit often, if not generally, work in all the units. Thus all the ball mills in all the units may be placed under a ball-mill man and his helper, even when there are sixty or more ball mills. The reasons for this are obvious. The work being similar the man becomes an expert. The ball-mill attendant should not have charge of crushers, concentrating tables, vanners, flotation equipment, thickeners or filters. Furthermore, as all the ball mills are on one level they can be better attended by the men on that level than by someone moving up and down between the machines at different elevations in any one unit. It is easier to travel on a level than to run up and down stairways.

It might also be pointed out that the unit arrangement applies to only certain classes of machinery. The roughing rolls and the filters may serve all the units or a large number of them—perhaps twenty—and one building covers them all and is served by one or two cranes. In consequence a twenty-unit mill is cheaper to build per unit than one that has only one unit. And, for the reasons mentioned, it also is cheaper to run. What is true of a mill is equally or even more true of a preparator for anthracite. Why should there be a No. 1 crusher to each unit or a separate thickener? The fact is the unit principle is carried as far as it is profitable in mills, and it should be used in the preparator in just the same way. Mr. Kniffin would surely follow this same rule.

Another point Mr. Kniffin makes is that in abandoning all mines but one a saving will be made, for the best mine will be taken, and, we may add, the one most convenient to the preparator. This is good counsel. It is true that many anthracite mines are too much spread. There is a lack of concentration at some plants, but we fear that those who fail to recognize that now would fail to observe it if triple or double shift were introduced. It is difficult to induce any operator to believe that the expedient of boarding up a mine that is remote and uneconomical would make for improved results and would lessen depreciation.

It is hard to believe that with conditions as they are in the anthracite region it would be possible to work places three shifts without losing more than is gained. If the mine is to be made large so that the triple shift can be obtained with single-shift operation at each working face, then why not make it thus large and work single shift?

The answer to this is, perhaps, that the shaft and the haulageways are the neck of the bottle, and in some cases that is indeed true, but in most cases it would be better to modify these than to try to gain the tonnage by the objectionable triple shift, which gives best results with daymen and not contract workers.

Means Taken to Make Safe and Efficient the Direct and Alternating Current at a Southern Illinois Mine

Copper Returns for Current—Should Underground Transformers Fire, Station Door Closes and Cuts Off Current—Each Half of Mine Can Be Run Electrically Separate and, if Desired, Both Sides from One Machine

By A. S. White*
St. Louis, Mo.

THE Kathleen Mine of the Union Colliery Co., located at Dowell, in Jackson County, Illinois, is electrically operated throughout. Power from a 3-phase 60-cycle high-tension commercial circuit is received at the mine substation at 33,000 volts and is there stepped down to 2,300 volts for distribution to the mine power station, the man-and-material hoist, the main hoist and to the underground alternating-current circuit. Underground haulage is necessarily performed by direct current; that used for all other underground power requirements is alternating.

Trolley circuits within the mine are energized by a 200-kw. Westinghouse motor-generator set and a 200-kw. Westinghouse rotary converter. These machines operate in parallel and deliver direct current at a bus potential of 275 volts. These machines, despite their differing characteristics, work well together, but the extreme variations in the primary voltage of the current as delivered from the power lines occasions some difficulty. To overcome this irregularity automatic voltage regulators will be installed, thereby insuring a uniform potential at all times.

The north and south sides of the mine are capable of complete segregation, sectional switches being placed in the trolley line wherever connections occur. This arrangement permits of the operation of at least one side of the mine while repairs are being made to either of the generating units. On idle days, however, the entire mine is supplied from one of the two machines.

Adequate Positive and Negative Lines

Main- and butt-entry trolley circuits are of 0000 wire, grooved or of figure-8 section. Panel entries are strung with 00 wire and sectional switches are placed in the circuits at the beginning of each butt- or panel-entry line. Positive feeders, consisting of double lines of 0000 triple braid-covered conductors, are carried on insulators along the rib in the main haulageways to certain points inside, the exact locations of which were determined by exhaustive voltage tests.

The two conductors are connected every 500 ft. and are tied into the trolley line every 1,000 ft. Negative feeder lines of 0000 bare trolley wire, paralleling the course of the positive feeders, are buried in the haulage road. These feeders are tied into both rails of the track every 500 ft. with arc-welded stranded flexible copper bonds. Both lines of rails on main- and butt-entry haulage roads are bonded throughout their entire length by similar connectors, with cross bonds placed every 200 ft.

Referring now to the alternating-current circuit, 3-phase 60-cycle power at 2,300 volts is delivered into the mine through a General Electric type FK-2 oil circuit breaker equipped with current transformers, inverse time-limit overload relay, overload trip coils and undervoltage release. This breaker is located in the mine power station. The mine circuit divides near the auxiliary shaft bottom into north and south branches, each of which is separately protected by a General Electric type GK-20 oil circuit breaker with overload series trip coils and undervoltage release. Transformer stations located inside and convenient to the working panels step the potential down to 240 volts for secondary transmission.

Armored "Kerite" cable is used for permanent and lead-covered cable for semi-permanent or temporary installation. Where the cables pass through back entries they are carried in trenches and covered to a depth of 1 ft. Wherever it is necessary that they cross traveling ways or haulage roads they are located in conduits made with concrete walls not less than 6 in. thick. To facilitate recovery and prevent accidental contact with buried cable during subsequent grading or mining work, a "wire map" has been prepared showing the location of all mine circuits. Use of high-tension lines not conforming to these standards is not permitted anywhere in the mine.

Making the Underground Transformer Safer

At inside transformer stations the 2,300-volt cable is carried through a tile in a trench to the interior of a vault. Leads from the cable are here connected through a General Electric type FK-20 oil circuit breaker to a bank of three 25-kva. transformers. The undervoltage release element has been eliminated from this breaker, so that it is not necessary to close the circuit after every interruption to the supply service. The trip coils are set to interrupt current at an overload of 100 per cent, the time delay at a minimum providing for an almost instantaneous break.

A standard underground station has been developed that is somewhat in advance of those at most collieries. Transformers underground have long been considered sources of fire hazard and the possibility of accident to workmen from contact with the high-tension circuit around improperly protected stations is too well known to require comment. Therefore, effort has been made here to construct a station that would reduce the possibility of accidental contact to a minimum, provide for the automatic and positive cutting out of the primary circuit to the transformer in case of overload, fire or explosion in the vault, and confine to the vault itself any fire that might possibly start. Fig. 1 shows the constructional features and arrangement of such a station.

The walls and roof of this vault are fireproof. The floor is covered to a depth of 6 in. with sand and fine gravel. This provides absorption for oil in case of accident to the transformer shell and prevents the formation of a pool of this liquid.

An iron door is suspended from the top by strap

*Union Colliery Co.

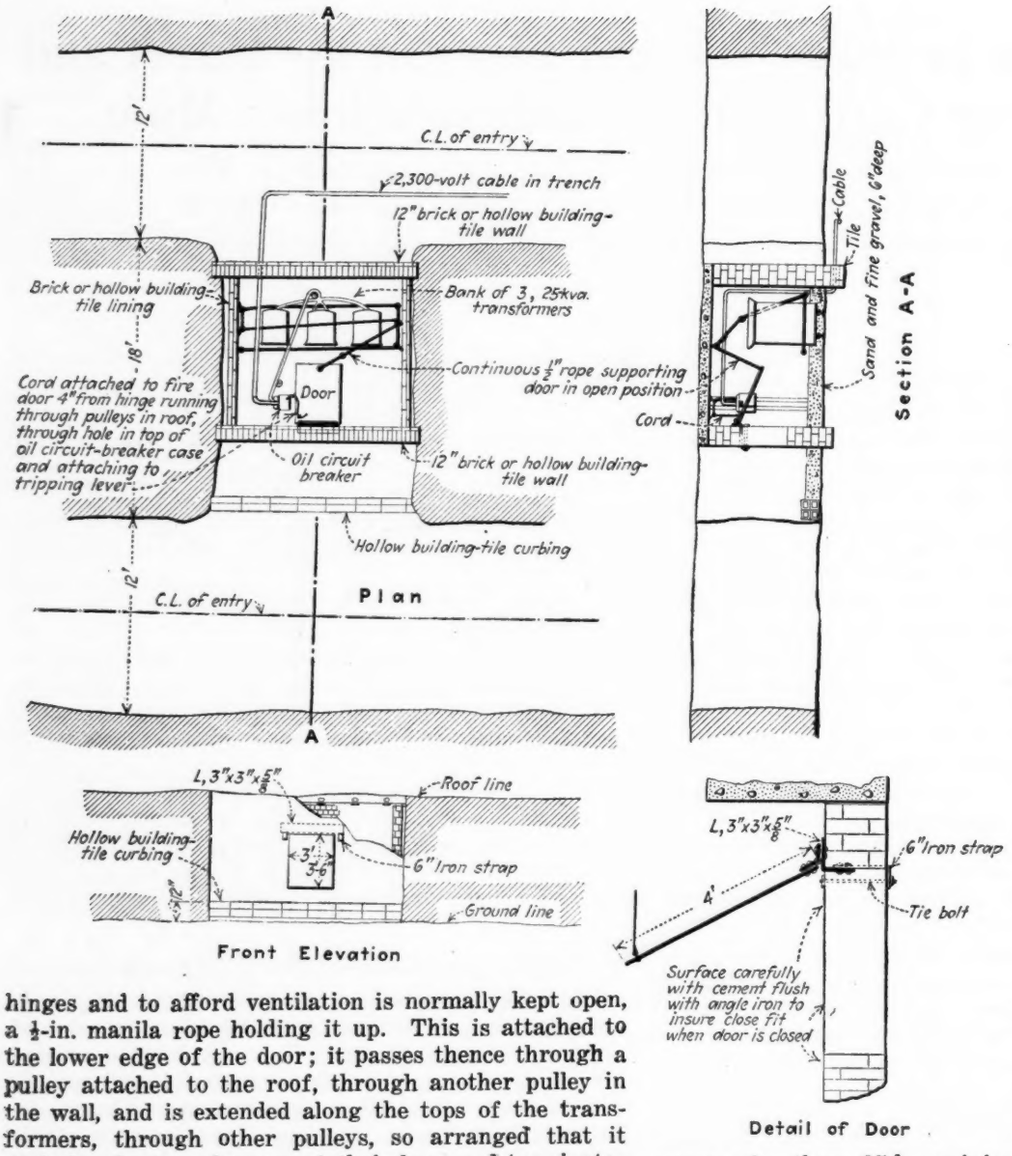


FIG. 1

Detail of Transformer Station

Risk that the transformers may catch fire or explode has caused the Union Colliery Co. to place them in a fireproof vault of brick or building tile, entered by an iron door. For the absorption of oil, should any escape through accident to the transformer shell, the floor of the vault is covered by sand 6 in. deep. The door is normally open, so as to keep the vault cool, but it is kept in that position by a rope so placed that should the transformers catch fire it would burn, releasing the door and allowing it to close tight. The 2,300-volt cable enters the transformer room through a covered trench. In order to protect still further against the possible formation of oil pools a hollow building-tile curbing is built in front of the vault, and a 6-in. bed of sand is used between the vault and the curb.

hinges and to afford ventilation is normally kept open, a ½-in. manila rope holding it up. This is attached to the lower edge of the door; it passes thence through a pulley attached to the roof, through another pulley in the wall, and is extended along the tops of the transformers, through other pulleys, so arranged that it encircles the transformers at their base and terminates in an eyebolt in the wall. A cord attached to the door about 4 in. from the hinge runs through pulleys in the roof, then down through a small hole in the top of the oil circuit breaker and is attached to the tripping lever.

Should a fire or explosion occur in the vault, the severance of the ½-in. rope would drop the fire door, which in turn would actuate the tripping lever in the oil circuit breaker and open the circuit. This would confine the fire to the vault and cut all power off the transformers. The frame about the fire door should be surfaced with cement, as shown in the drawing, so as to afford a tight fit when the door is closed. The oil circuit breaker which is placed just inside the door may be manually operated should occasion arise for entering the vault.

With the exception of one station of 30-kva. capacity which is located near the auxiliary shaft bottom and which supplies power to the pumps and motor-repair shop, all underground transformer stations are of 75-kva. capacity. For these stations banks of three 25-kva. transformers have proven more satisfactory than individual 3-phase units of the desired size, because of the greater ease with which the smaller units may be moved and installed underground.

Each 75-kva. bank is capable of providing ample energy for three 35-hp. mining machines, the number normally operated from each station. Larger stations supplying more machines have not proved economical, for with them the distance of secondary transmission was too great. Two 150-kva. transformers installed during the war, when difficulty was experienced in obtaining units of the desired size, have been removed and smaller units substituted.

Equipped with the 75-kva. banks, each station normally supplies three 20-room panels or their equivalent. Each bank may be so located as to be not more than 1,500 ft. from the most distant point served. Only under unusual circumstances, and then only temporarily, does the distance to the foot of a panel exceed 550 ft. Normal panels require an additional 500 ft. of conductor to reach the most distant place.

Fig. 2 illustrates a typical location of a transformer station and the arrangement of secondary circuits. A further division of transformer units (such as one to every machine) with the attendant advantage of even shorter secondary transmission was deemed inadvisable because of the expense incident to the construction of so large a number of fireproof stations as well as that of installing and subsequently recovering the greater amount of cable required.

Secondary circuits from all transformer stations are

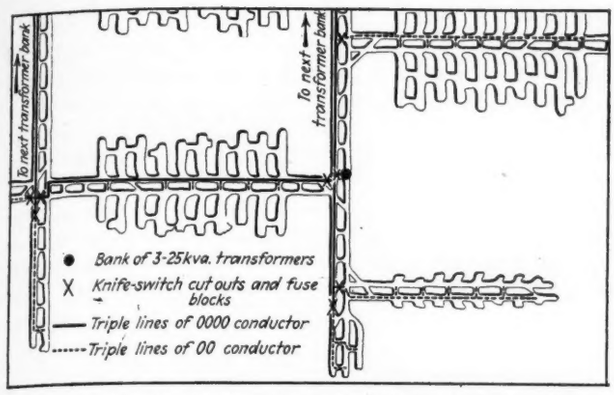

To next transformer bank
To next transformer bank
Bank of 3-25kva. transformers
Knife-switch cut outs and fuse blocks
Triple lines of 0000 conductor
Triple lines of 00 conductor

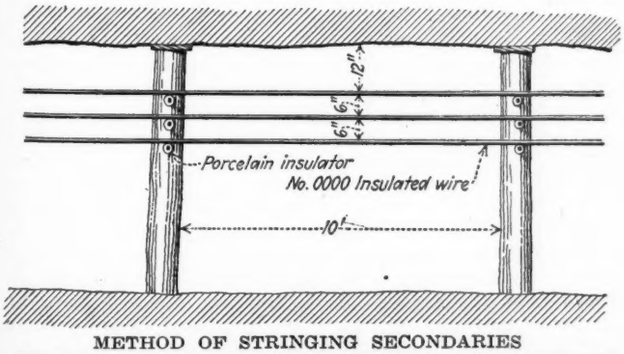
FIG. 2. TYPICAL LOCATION OF TRANSFORMER STATION
Each station is equipped with a 75-kva. bank and normally supplies three 20-room panels or their equivalent. The stations are so located as to be within 1,500 ft. of the most distant point served and not over 550 ft. from the foot of the most remote panel to be fed. Banks of larger transformers have been tried and found uneconomical.

tied together. Knife-switch cut-outs and fuse blocks are placed between each transformer bank and the secondary circuit, also between each two transformer stations on the secondary circuit. By this arrangement, in case of an accident to any transformer, it can be cut out of service and the panels normally supplied from it will be able to draw power from other stations. Under normal operating conditions with all secondary circuits tied together the load factor is improved and any peak thrown on an individual transformer bank is shared by the connected stations.

Insulated wire is used exclusively in the secondary circuit. While it is realized that insulation fails to afford complete protection against shock it is believed that at least some measure of security is attained and the probability of fatal accident is materially reduced thereby. Certainly during the time when men employed on entries are required to work in close proximity to a conductor the danger is minimized. On all secondary circuits 0000 wire is used except in panel entries, where 00 is installed.

On main and butt entries the wire is carried in the back passage on porcelain insulators fastened by lag screws to props set about 10 ft. apart. The insulators are so spaced as to give a clearance between the top wire and the roof of 12 in. and between wires of 6 in. Wherever required to pass along the roof, as in crossing over haulageways, the wire is carried on porcelain insulators fastened to the roof by lag screws sunk in drilled and plugged holes.

In panel entries the wire is carried up one heading on props set along the pillar rib, short leads through each crosscut supplying the other entry. Fuse blocks and



METHOD OF STRINGING SECONDARIES
Wherever, as in crossing over haulageways, it is necessary to place the wires against the roof, they are carried on porcelain insulators fastened to the roof by lag screws sunk in drilled holes in which wood plugs have been inserted.

knife-switch cutouts are introduced at the head of each panel-entry circuit.

All gathering in this mine is done by 6-ton locomotives equipped with either mechanical or automatic electric cable reels. Main-line haulage is performed by 15-ton locomotives. With the exception of a few breast machines, used by gangs in entry work, the coal-cutting equipment consists of 35-hp. shortwall machines using a 7 ft. 6 in. cutter bar and equipped with automatic trucks and cable reels. All these gathering, hauling and cutting machines are of Goodman manufacture. As a safety measure all trucks are now being equipped with brakes.

Anthracite Section of American Mining Institute Meets in Wilkes-Barre

WITH Eli T. Conner, consulting mining engineer, of Scranton, in the chair, the anthracite section of the American Institute of Mining and Metallurgical Engineers met in the Westmoreland Club, Wilkes-Barre, Saturday, Feb. 4. The members discussed the paper presented by D. C. Ashmead, anthracite editor of *Coal Age*, entitled "Can Anthracite Mines Be Operated on More Than One Shift?"

Mr. Connor declared that the paper appeared to favor conclusively the negative side of the question. He did not believe in the words "It cannot be done," but he refused to say whether it would "be practicable or profitable" to work more than one shift per day, but it "seemed" to him "that anthracite engineers and managers are too resourceful to admit that they cannot do what other mining men have done and are doing."

Transportation and Markets Limit Shifts

L. M. Kniffin, development engineer of Madeira, Hill & Co., said that the limitations as to transportation and market would prevent any general increase in the number of shifts. So the possibility of general triple shifting must be dismissed. Mr. Kniffin discussed assumptions Nos. 11 and 5 in Mr. Ashmead's paper. No. 11 suggested a case where "Two of three collieries are abandoned and work is to be concentrated in one colliery, producing the same tonnage as obtained from the three, both colliery and preparator be operated on three shifts." Mr. Kniffin believed that as the colliery selected for operation by triple shifting was the most economical of the three, "it might be possible to make large savings in cost by operating the best equipment three shifts a day." The improved working conditions might overcome the disadvantage of requiring the men to change shifts. "In a group of developed properties it might prove economical to concentrate work in one mine and thus make savings in the operation of haulageways, slopes, etc. The first mine would in this case be exhausted and abandoned at an earlier date, so that maintenance expense would cease as far as it was concerned."

Assumption No. 5 called for "a new mine with a preparator to be so planned as to operate on three shifts." Mr. Kniffin said that this problem of multiple shifting is less complicated where transportation, hoisting and preparation can all be provided for on a less expensive scale, "multiple shifting being kept in mind. Under these conditions the conclusions arrived at from a study of the curves would not apply, as the new equipment, being planned for three-shift operation, would not be built to avoid the difficulties that have been pointed out." Mr. Kniffin believed that by building by units,

as is the practice in the metal-mining field, it would no longer be true that "the cost of a preparator one-third the size of another will be approximately 100 per cent more per ton of output," as Mr. Ashmead has stated. Mr. Kniffin stated that "as each unit is complete in itself the construction cost of each should be about the same and a reduction in mining capacity would seem therefore a reduction in the number of units." The same condition applies to the force of men required to operate the preparator. It is the general practice for each unit to have its complete crew so that outside of superintendence a one-unit plant should require about one-third the number of men that a three-unit plant would require. On this assumption Mr. Kniffin presented Table I.

TABLE I. COMPARISON OF OPERATING COSTS FOR A STRUCTURAL-STEEL PREPARATOR

Preparator Operating Costs Excluding Labor	One Unit Producing 1,000 Tons in 8 Hours Operating 24 Hours		Three Units Each Producing 1,000 Tons in 8 Hours and Working Single Shift	
	Annual Cost	Cost per Ton	Annual Cost	Cost per Ton
Interest @ 8 %	$14,400	$0.016	$43,200	$0.048
Amortization @ 5 %	9,000	0.010	27,000	0.030
Taxes @ 2 %	3,600	0.004	10,800	0.012
Free insurance@ 2 %	360	0.000	1,080	0.001
Depreciation @ 1.5 %	2,700	0.003	8,100	0.009
Power	18,000*	0.020	28,800†	0.032
	$48,060	$0.053	$118,980	$0.132

Difference in costs, $0.079.

	First Cost	Interest and Amortization‡	Per Ton	First Cost	Interest and Amortization	Per Ton
Underground development and equipment	$250,000	$30,000	$0.033	$400,000	$48,000	$0.053
Hoisting and miscellaneous equipment	75,000	9,000	0.010	100,000	12,000	0.013
R.R. yards and sidings	60,000	7,200	0.008	60,000	7,200	0.008
	$385,000	$46,200	$0.051	$560,000	$67,200	$0.074

Difference in other costs, $0.023.

*Figured at 1c. per kw.-hr. †Figured at 1.6c. per kw.-hr. ‡Interest and amortization are figured at 12 per cent.

Mr. Kniffin said that with triple shifting of places the development work for each ton of coal mined would remain approximately unchanged. The working places would be kept open a shorter time and fewer breasts would be required for any given output. As for the difficulty of keeping development sufficiently ahead of mining he believed that with more intensive operation of the development forces it would be possible to bring about faster and cheaper work, as had been the case in metal-mining practice. He admitted that it would be difficult to change the long-established custom which gave the employees the natural recreation and rest time of the day to spend with their families. "The small margin of saving that three-shift operation presents might well be considered as an investment in the welfare of the workers."

William H. Grady, of Duncott, Pa., pointed out that today the working hours were less than eight at the face of the breast and that twenty or forty years ago it was much more than eight. As a result output is below what it should be. He believes that breasts could be worked continuously.

B. H. Stockett, of the Locust Mountain Colliery Co., declaring that it would be almost impossible to get labor to accept the three-shift plan, stated that miners usually were at home by 1 p.m., whereas a few years ago they arrived home so late that had there been movies in those days they would have been closed before the miners could attend them.

Eli T. Conner agreed that at present the triple shift was unthinkable, but when the market comes to demand a larger output than a single shift will provide, the engineers of the region will find a way to provide machinery to accomplish the desired result and will induce the men to work as many shifts as are necessary.

Douglas Bunting, general superintendent, Lehigh & Wilkes-Barre Coal Co., said that in that part of the article referring to underground forces it will be found, on totalling up the workers in the four operations cited, that there are 1,174 miners and laborers, 817 inside company men and 53 outside company men. If that is correct 46 per cent are miners and laborers, 33 per cent inside company men and 21 per cent outside men. That would go counter to the fact that in general the number of miners and laborers constitutes only 30 to 40 per cent of the men employed.

Mr. Bunting said that this discrepancy between his experience and Mr. Ashmead's figures may have arisen from Mr. Ashmead having failed to include floating gangs such as many anthracite operations carried. He felt that these should be included. Mr. Ashmead replied that his figures are based on the mine inspectors' reports.

William Griffith, of Scranton, remarked that the tonnage that would result from triple shifting could never be placed on the market. He had collected figures at one time for a financial journal. They showed that to hold its own anthracite must be sold at a price not more than $3 above the price of bituminous coal.

It may be said here that charts 1-B and 4-B in Mr. Ashmead's article, which appear on pages 163 and 166 of this volume, should be corrected so that the extreme left ordinate should be 10 in one case and 100 in the other. The figures have been shifted to the right one space in both cases, overlooking the fact that the true origin of co-ordinates is omitted from the illustration.

G. L. Stevenson then explained the "Engineers' License Act" of Pennsylvania which goes into effect June 1, 1922, and moved that the Institute of Mining and Metallurgical Engineers endorse the efforts which the Engineers' Society of Northeastern Pennsylvania is making to have the act declared unconstitutional.

Coal Mining Leads in Loss of Wages and Time from Accidents in Pennsylvania

WAGES lost in Pennsylvania in 1921 because of accidents amounted to $9,924,959, according to the Workmen's Compensation Bureau of the Department of Labor and Industry, which gives 2,061,733 days lost by workers because of disability. Of this total number of days lost 748,623 are attributed to the coal miners for disability while the amount of wages lost to these workers was $4,085,460, or nearly one-half the total loss.

Last year there were 41,339 accidents for which compensation was paid inside the mines of the state and 8,619 outside, in the anthracite and the bituminous fields. There were more amputations in metal work and mine cases than in all other industries combined, with 114 in coal-mine accidents and 105 among metal workers.

Dependent upon those injured in 1921 were 108,598 persons. The 1,924 fatal cases in the state resulted in compensation being provided to 2,164 dependents. The report of the bureau says relative to fatalities and accidents in the mines: "More fatalities were attributed to the coal-mining industry than any other, excluding metal workers. There were 904 fatal accidents reported in the mines. There were 15,829 cuts and lacerations in mine accidents, 21,754 crushes and bruises, 3,355 fractures, 5,447 sprains and lacerations, 114 amputations and 106 asphyxiations. Blood poisoning developed in 1,526 accident cases in the mines."

Locomotive Has Two Motors, One Using Battery Power And One Current from the Trolley Wire

Current from Each Source So Different That Only Separate Motors Will Give Utmost Efficiency—Only One Motor Under Power at a Time but All Four Wheels Always Act as Tractors

ALTHOUGH the requirements for the economical handling of an enormous mine tonnage have not been, and probably cannot be, met in any one type of locomotive, certain types have been developed which have materially reduced the variety of equipment necessary for this work. At many operations the storage-battery locomotive has been found adequate for all the classes of hauling work demanded. The improvements that have been made in battery construction and locomotive design have extended the scope of this type of locomotive, originally intended for gathering work only, to entry work and in many mines where the distance is not prohibitive, to main-line haulage also.

The work that a battery locomotive will perform may be estimated closely because it carries its own source of energy, and its capacity is predetermined. From a careful survey of the work to be done, a locomotive of the proper type and capacity may be selected and all chance of failure eliminated. The most successful battery locomotives in operation today were installed on this basis, and at least one of the leading battery-locomotive manufacturers will not install a locomotive unless his engineers know that the work for which it is recommended is such as it can perform.

The advantages derived from the use of battery locomotives have resulted in a demand for a machine that can be used for gathering from the rooms and can also do much entry or main-line haulage, with a range of speed suitable for each class of work.

Ways of Mating Trolley and Battery

The ideal locomotive would be one that combined the characteristics of the battery locomotive with those of the trolley locomotive, with the least sacrifice of efficiency. Such a locomotive should have a storage battery of sufficient capacity, without "boosting," to do a reasonable amount of work in sections not equipped with trolley wire, combined with some means for conserving the battery energy when it is operating in sections that are so equipped.

The characteristics of this type of machine are those of a battery locomotive. From the trolley only a predetermined amount of current may be taken, which means that all heavy demands for current in excess of the predetermined value must come from the battery. The voltage at motor terminals is maintained by the battery irrespective of the trolley voltage, which may be low owing to the heavy demands made by other equipment. Instead of the power plant being compelled to supply 200 or 300 amperes to propel the locomotive, it is called upon to supply only the predetermined amount of current to assist the battery.

Thus a locomotive of this type may be termed a trolley-assisting locomotive. When in contact with the trolley wire the battery may or may not be taking current, depending on what the locomotive is doing. If the locomotive is standing, the predetermined quantity of current to be taken from the trolley goes into the battery; if it is running light, the current necessary to propel the locomotive goes to the motor and the rest to the battery; if the locomotive is operating under load, all current from the trolley goes to the motor and combines with the required additional battery current necessary to move the load.

When running light with trolley in contact, the speed of the locomotive is about 15 per cent higher than when running off the battery, because the voltage at motor terminals is battery *charging* voltage instead of battery *discharge* voltage.

Low-Voltage Operation of Trolley Motor

Another partial solution is a trolley locomotive to which has been added a storage battery, and the manufacturers of this type of machine claim that it has the characteristics of either a battery locomotive or a trolley locomotive, depending on the source of current from which it is drawing. Though the operation of this machine is normal when used as a trolley locomotive, it is inefficient when used as a battery locomotive because the lower speed is obtained by operating trolley motors at low voltage. The result is that a large percentage of the energy of the battery is absorbed before any work is done by the locomotive. These machines usually have two-motor drive, the motors being separately connected to each axle, and maximum tractive effort with minimum consumption of energy cannot be obtained in this way.

The latest development in combination locomotives is the Ironton Duplex, in which separate motors are provided for battery and trolley voltage, each being entirely independent of the other, thus retaining the characteristics so desirable in each type. It is equipped with a battery of approximately the same capacity as a straight battery locomotive of the same weight and when operating from the battery the operation is through a motor designed for battery voltage. When operating from the trolley a separate motor designed for 250 volts is used. No provision is made for charging the battery from the trolley, as experience has shown that the standard battery equipment is sufficient for the daily requirements in any situation for which this type of locomotive is recommended. In operations where the work is evenly divided between the battery and the trolley features, it has been found that the Duplex will handle all the gathering work without the battery being recharged every day.

The motors are placed in opposite ends of the locomotive. Each motor is connected to both axles through worms and gears inclosed in dust- and oil-tight cases, and operating in oil.

The adjacent ends of the worm shafts are connected by means of a two-joint universal coupling. The ends of this floating propeller shaft are provided with steel pins on which are mounted steel balls driving against longitudinal recesses in the housings. This combination pro-

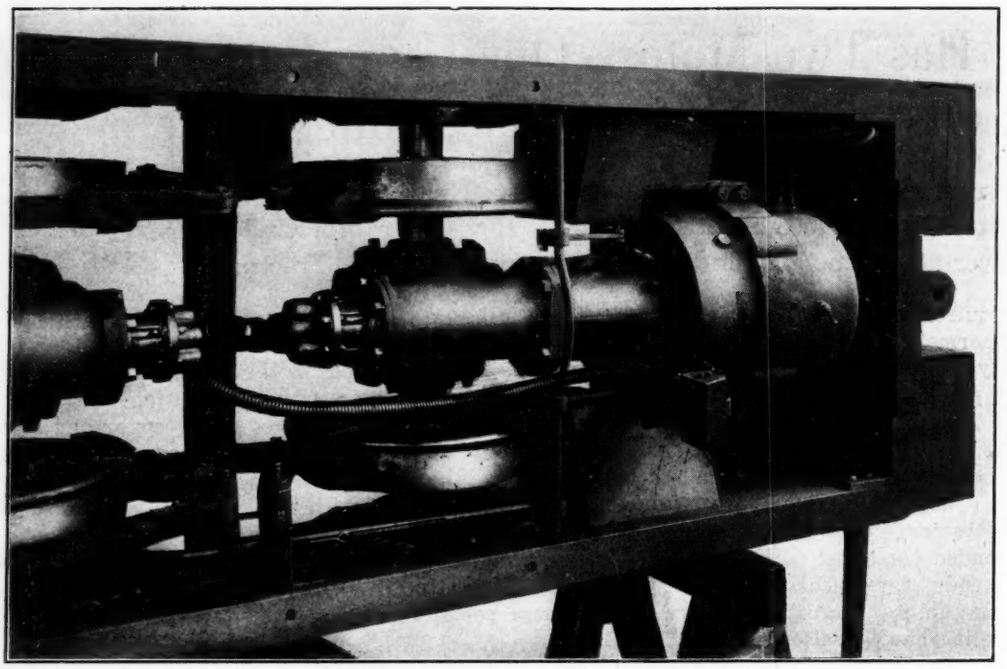


FIG. 1

Drive Unit

With distance piece between gear cases and motor. Note also the flexible oil duct leading to the gear case from outside the battery box. The sand boxes are protected with a cover on the inside of the frame and an opening is provided by which they may be filled from the outside of the locomotive.

vides a direct drive to all four wheels from either the battery or trolley motor and permits efficient transmission despite all the changes in angle resulting from the movement of the axles. Springs bear against the two ends of the propeller shaft and permit lengthwise movement.

To prevent misalignment, which would be highly detrimental to the proper operation of worm gearing, the gear cases are rigidly connected to the motor frames by cylindrical distance pieces which totally inclose the steel-jaw couplings between the worms and the motor shafts. The commutator ends of the motors are flexibly connected to the locomotive frame through universal joints which permit the motors to maintain proper alignment with respect to the axles and follow them freely, even over the rough track frequently found in mine rooms. The removal of cap screws at the motor end of the distance piece and the withdrawal of a pin in the motor support at the commutator end permit the motor and its half of the jaw coupling to be lifted out of the locomotive.

The gear cases are of cast steel and are provided with double-row combination radial and thrust ball bearings. They are supported from the axles. The motors are supported between the gear cases and the locomotive frame, thus distributing the weight of the complete assembly. Lubrication is supplied to the gear cases through flexible steel oil ducts leading to an oil box on the outside of the battery compartment.

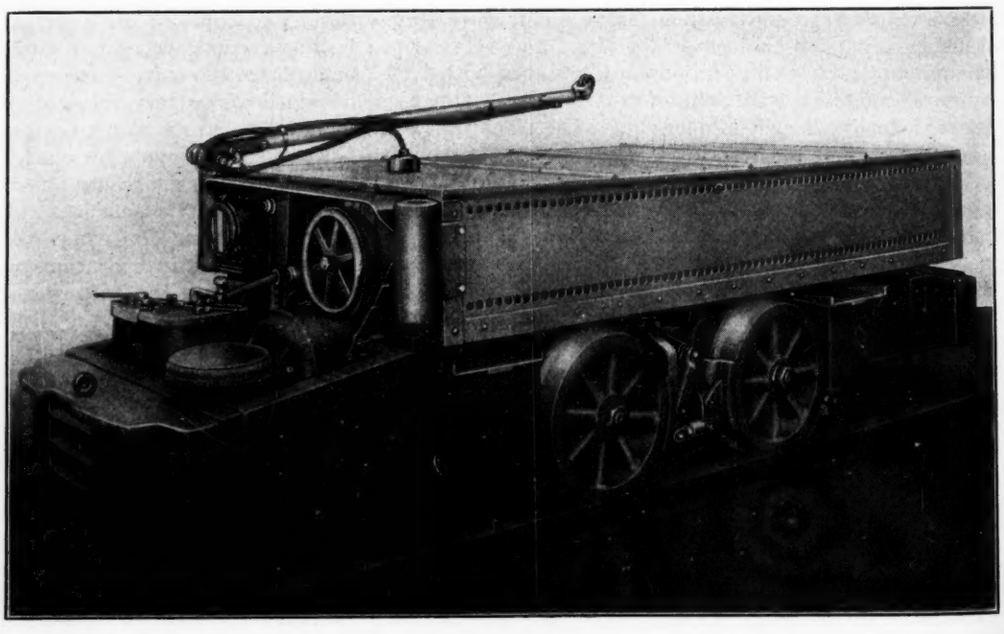
The thread of the worm and the teeth of the gear are shaped so as to afford a maximum of rolling contact and a minimum of sliding contact. This is quite different from the gearing made a few years ago wherein the contact was practically all sliding.

The worm is made of nickel steel, heat-treated and then ground all over. This process of grinding by special machinery corrects the distortions resulting from the heat treatment and insures that the teeth will

FIG. 2

Duplex Locomotive

Driven by separate motors for battery or trolley current. The battery is adequate for an all-day run and for more than a day if current is taken from the trolley. The trolley is not provided to help out the battery, which needs no help, but to provide greater power and speed on non-gathering service.



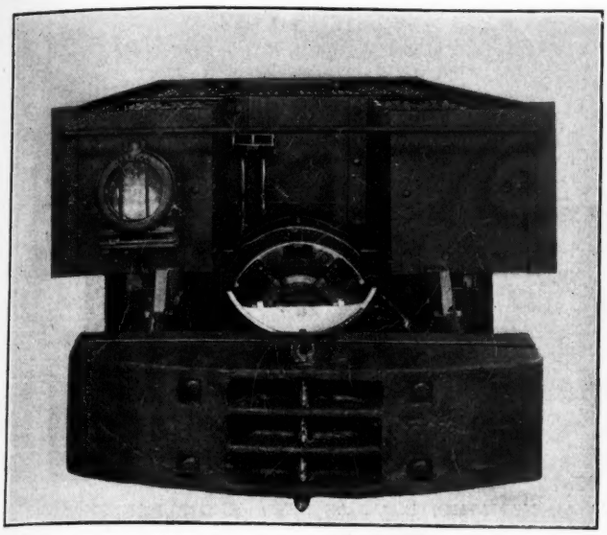


FIG. 3. FRONT VIEW OF LOCOMOTIVE
In this illustration the top is removed so as to show the accessibility of the motor and of the oil box at the end of the oil ducts by which the gear cases are supplied with lubricant.

be of the correct shape. The gear wheel is made of specially hard phosphor bronze, chilled to obtain maximum hardness and the desired physical properties as well as a low coefficient of friction. It is cast in the form of a ring, which is securely attached to a steel hub. This permits replacement to be made without disturbing the hub and insures proper alignment of the new part. The efficiency of this gearing should lie between 93 and 96 per cent.

The controller is of the double-drum type, the main or operating drums making connections for split-field control to both motors, while the second drum has two positions and connects one or the other motor to its proper source of energy. Safety locking features are provided to prevent accidental movement of the controller handle.

The general constructional details of this locomotive are the same as those followed in the other types built by this manufacturer. They include channel and plate-steel members, together with steel castings, heavily reinforced with angles and cross braces; cast-iron wheels with chilled treads or steel tires as desired; brakes of the equalizing type with quick-acting brake screw and hand wheel; heavy cast-steel bumpers mounted on solid oak cushions; wheels inside or outside of the frame, as may be desired.

This locomotive is made in a high and a low type. The approximate dimensions of the chassis of the high, or 10,000-lb., type are: Height, 42½ in.; length exclusive of bumpers, 12 ft. 6 in.; width including trolley sockets, 57½ in.; wheelbase, 36 in.; diameter of drivers, 22 in. The approximate dimensions of the chassis of the low, or 8,000 lb., type are: Height, 31 in.; length exclusive of bumpers, 12 ft. 10 in.; width, 64 in.

The advantages claimed for the worm drive, and they are amply substantiated by the experience of heavy auto-truck manufacturers, are: It permits the desired speed reduction to be made in one compact unit and the use of a medium-speed, high-efficiency motor; it requires a minimum number of parts and permits the complete inclosure of gears operating in a lubricant; it eliminates vibration and reduces armature trouble approximately 50 per cent; the worm is smooth-running and silent in operation and no adjustment of gears is necessary; stripping of teeth is impossible; the gear and the thread on the worm wear slowly and their efficiency is maintained throughout their entire life.

The number of parts that should be stocked is reduced to a minimum because axles, gears, worms and gear cases are interchangeable for either end of the locomotive. These parts also are interchangeable with the driving parts of the straight battery locomotive of the worm-gear type.

Bearing in mind that the combination locomotive is not intended to replace the trolley machine but rather to extend the usefulness of the battery locomotive without impairing its efficiency either altogether or in part, actual service requirements indicate that the motors should be designed for the voltage of the current upon which they operate. All wheels should be drivers in order to obtain maximum tractive effort. Speed under battery operation for gathering work should be approximately 3½ miles per hour at the rated drawbar pull, whereas for trolley operation it should be about 6 miles per hour in order to facilitite quick handling of loads to the main partings and the return of empties to the rooms.

The machine here described is designed to meet these conditions in the most direct and efficient manner. The flexibility obtained lends itself to all applications where a straight battery locomotive will not meet the requirements. In many operations it will do all the gathering and hauling. In the larger mines it will materially reduce the frequency with which partings must be moved, eliminate many trolley extensions and much rail bonding as well as avoid the necessity of using mixed equipment where conditions vary greatly from section to section. In those portions of the mine where favorable conditions prevail operation may be almost entirely from the battery while those where conditions are more severe may be successfully handled from the battery and trolley.

Flotation Plant Will Treat Slack, Sludge And Picking-Table Refuse

A NEW washery plant is being installed by the Western Fuel Corporation of Canada, Nanaimo, B. C., which is regarded as embodying principles as yet untried on the American continent. Provision is made for the incorporation of oil flotation cells such as have been found to be commercially practical as a result of experiments carried on during the last few months. Similar experiments have been undertaken by the Canadian Collieries (D), Ltd., and the Granby Consolidated Mining, Smelting & Power Co., these latter also being Vancouver Island companies.

John Hunt, general manager of the Western Fuel Corporation of Canada, has two objects in view in introducing oil flotation—to produce clean coal and to use material heretofore wasted. The washery plants on Vancouver Island have hitherto used Robinson cone washers, it being customary to treat the fine residue from the cone washers by passing it through jigs and over concentrating tables. No serious effort, however, has been made to concentrate the coal in the slack and sludge, which have gone to waste dumps or been deposited in the sea.

The coming summer should see the new plant in operation, as construction already has started and the machinery has been purchased. P. E. Peterson, well known as a pioneer in oil flotation, is the designer, and it is said that the plant is remarkable for its simplicity,

NO. 1 MINE, WESTERN FUEL CORPORATION OF CANADA, NANAIMO, B. C., AS SEEN FROM THE SEA

requiring at the most two men per shift to supervise its operation. It will be an addition to the present washery, in which jigs have been discarded and four Deister coal concentrating tables substituted.

Refuse from the picking tables of the present washery and outside refuse will be the materials treated. That from the dumps will be delivered by paddle conveyor to a trommel. The oversize will pass from the trommel down a launder to an 8-ft. Hardinge ball mill and the undersize will pass by gravity into a screw classifier, the oversize from which will be carried by gravity onto two Diester coal concentrating tables. These tables produce three products, viz.: coal, middlings and rock.

The undersize, or overflow from the screw classifier, will be carried by gravity to a battery of six Peterson flotation cells; the product from two of these cells will be clean coal and that from the other four middlings. The coal from the flotation cells will pass by gravity into a settling tank 30 ft. in diameter, from which the dewatered fine coal will pass to a paddle conveyor, by which it will be carried to railroad cars ready for market.

The middlings from the flotation cells will pass by gravity along a launder to a bucket elevator near the ball mill, into which the overflow water from the settling tank also is discharged. The bucket elevator discharges into a launder along which the material passes by gravity onto the trommel screen and will be subjected to the same series of treatments as have been described. The coal and middlings concentrates made on the Deister tables will be carried by gravity to a second screw classifier near the settling tank and the fine dewatered coal will be carried to the paddle conveyor, which will deliver it into the railroad cars. The refuse from the picking tables is carried in cars to a bin, from which it will go into a Blake crusher, which will discharge the roughly crushed material into the Hardinge ball mill.

AT THE CENTRAL DISTRICT STATION of the Bureau of Mines at Urbana, Ill., laboratory work on the distribution of sulphur forms at certain mines in the Illinois No. 6 bed has been completed. Sulphur forms have been determined in the raw coal, clean coal and refuse resulting from washing this coal on the S. S. & S. concentrating table at Dallas and on specific gravity fractions.

DR. A. R. POWELL, of the U. S. Bureau of Mines, is conducting an investigation to establish the form in which sulphur occurs in coke. A scientific study of this problem is necessary before further work on coke desulphurization can proceed.

Mr. Bock Considers Three-Shift System

Staunton ILL. Feb. 1the. 1922

Editor *Coal-Age.*
New York.

Dear Sir:

Right on the heel, after mailed my letter, I received Vol.21.No.4.*Coal-Age.* In judging from serval Article and letters,I would threw my writing in the wate basket

I kindly beg to pardon me if get somtime to harsh in words, I sadly regert to study the condition to serious, wich arouse a awakening feeling of veneration; we chasen around in a circle like a dog to catch his own tail insomuch a Men would wonder, wy is it impossible Men wont work on a three shift system in a Coal Mine? perhaps Mr. Dever C.Ashmead means to say in his Article page 162,Vol. 21 the Men are not acustumed to it;last summer a company of these Town tried to double shift certainEntry s and found oppositon by the Men, now the close the Mine,it is costume .—WY?— The cause lies deeper,what is the use to pass any more words over, costume, predominats Coal Mining more than any other Industry, we hear Men profess, protest, give great words what should be done, and than do as just others done before,the are nothing but dead images and ben only propeled by the force of Costume;we are costumed to so many things that we be come a slave to costume.—

With the progress of life costumes either degenerate ore wear out according to the evolution,and become bad and a nussiance to the wellfare of humantty;history tells uss where the forces of bad and degraded Costumes createt endless hardship on the human race.Now since Costume be the prinziple factor to govern mind and body of Mankind,let us obtain good costumes;good Costumes can only be perfectet if begun in young years,wich is education wich is in turn the earlys Costum of Civilization.BadCostumesin the Russian Government degraded in a political Oligarchyand a very smal one at that.the same is true especialy in our Mining Industry we have a Industrial Oligarchy ,and on of the worst kind at thatbut what is the use to waste any more timeon that

"Woulstthou be free?-The chain that gall thy breast;
With on strong effort burst,and be at rest.—(Fr. Bacon) I am gentlemen, yours very truly

Henry Bock.

Light Ash, Heavy Coal and a Large Percentage of Fines Complicate Vancouver Island Jig and Table Washing*

Coal from Some Mines Is 85 Per Cent Fines—Some Fine Coal Is Cleaner Than the Larger—Coarse-Material Table Prepares Four to Five Tons Per Hour; Table for Finer Material Six to Seven Tons

BY M. W. GARMAN†
Cassidy, B. C.

COAL from some seams is so free from deleterious material that only dry screening is needed to produce a good fuel, but on Vancouver Island this is not so. In earlier days the chief product of a mine was lump coal, with perhaps egg or nut, all prepared by dry screening; the remainder was a waste product. But today the value of the small sizes is being recognized, so that what was once a waste product has been converted by washing into a salable fuel, to the advantage of both the producer and the consumer.

In the following notes on the washing of Vancouver Island coals only those from the seams of the Nanaimo field are under consideration. In this field all the seams except the Newcastle make a large quantity of fine coal, so that of the whole product 40 per cent to 85 per cent is screenings of less than 2-in. mesh. The coal of the Douglas seam is especially fragile, as much as 85 per cent of it being screenings of the size indicated.

PREPARATION BEGINS WITH MINING OF COAL

For several reasons the preparation of coal should begin in the mine. Where a coal is friable, like that of Vancouver Island, the underground management should use great care to see that all unnecessary breakage is eliminated. Powder should be used with due caution in the shooting of the coal, which also should be loaded and transported with all care. All impurities, such as rock, bone and dirt, should be extracted as far as possible, and where the purity of the coal at any working place is in doubt, a sample should, if practicable, be taken and analyzed. If it is found to be too high in ash, the place should be stopped, or if the roadway must be driven for haulage or ventilation, or for any other reason, the material should be gobbed—that is, left in the mine—and not sent out with the other coal. Unfortunately many regard a washery as a place where 100-per cent extraction can be made from any class of material. In reality the higher the ash content in the coal, the lower the possible recovery, the washery being only a part of the preparation plant necessary to produce a marketable product.

In the Nanaimo field three kinds of washers are used, namely, jigs of various types, as the Luhrig, New Century and Stewart; cone washers, as the Jeffrey-Robinson, which is a combination of a hydraulic classifier and a centrifugal machine; and tables, as the Massco and Deister-Overstrom types.

Before taking up the system of washing in use at the mine where I am employed, a few general remarks as to the nature of the coal and its impurities are desirable. The coal itself may be roughly divided into three classes with respect to its hardness: (1) A hard, dull gray coal; (2) a medium hard, lustrous coal, and (3) a dark, dull, soft variety. It must be understood that these divisions are not hard and fast differentiations, for intermediate varieties connect them.

Both the specific gravity and ash content have a wide range. The former runs from 1.24 to 1.60, and the latter from 4 per cent to 26 per cent, but there is no apparent relation between the ash content and the specific gravity. The wide range of the latter shows that some coal will be lost in washing, because there is not enough difference between the specific gravity of the coal and the rock and because flat, flaky pieces of the latter have a tendency to go over with the coal. The refuse coming from the mine with the coal is chiefly rock, bone coal, shale and clay, of varying specific gravities and ash contents. Table I shows some of the variable qualities of the coal and refuse, but it by no means exhausts them all. The arrangement in each case is according to increasing ash content.

TABLE I. RELATION BETWEEN DENSITY AND ASH CONTENT

	Coal		Refuse	
	Specific Gravity	Ash Percentage	Specific Gravity	Percentage
No. 1	1.30	3.86	1.76	42.22
No. 2	1.25	3.90	1.57	44.37
No. 3	1.32	7.12	1.91	57.13
No. 4	1.28	7.50	1.75	62.25
No 5	1.24	7.63	2.00	68.50
No. 6	1.60	8.22	1.77	75.34
No. 7	1.30	9.00	2.25	84.55
No 8	1.31	15.57	2.60	88.38
No. 9	1.38	17.55	....	....
No. 10	1.43	26.25	....	....

The process of washing at Cassidy is as follows: Mechanical feeders take from the coal bin the raw feed, consisting of minus 2-in. screenings from the lump coal screen, and deliver it to two Stewart jigs each of a capacity of forty tons per hour. These jigs are of the double-compartment type. In the first compartment the heavy rock and heavy bone are removed, and in the second the lighter bone and any rock which may have passed over from the first compartment. Some screen analyses are to be found in Table II.

TABLE II. SCREEN ANALYSES OF RAW FEED TO JIGS

Size	Percentage	Size	Ash Percentage
+ 2-in. mesh	0.0	Nut + 1-in. mesh	10.9 to 18.05
+ 1-in. mesh	14.3	Pea + $\frac{3}{16}$-in. mesh	28.6 to 17.30
+ $\frac{3}{16}$-in. mesh	22.6	Slack — $\frac{3}{16}$-in. mesh	60.5 to 26.67
+ $\frac{1}{2}$-in. mesh	4.4		
+ $\frac{1}{4}$-in. mesh	15.9		
+ 20-mesh	19.9		
+ 40-mesh	9.7		
+ 60-mesh	4.6		
— 60-mesh	8.6		
	100.0		

These analyses give a clear idea of the large percentage of fines in the raw feed, and they show clearly that great care ought to be exercised in mining, in order that these fines may be reduced to a minimum; as it is, much good fine coal is lost in washing.

Whether sizing should precede or follow washing will depend on the particular plant and mine concerned,

*Article entitled "Coal Washing in Vancouver Island," to be presented at the annual general meeting of the British Columbia Division of the Canadian Institute of Mining & Metallurgy, February, 1922.

†Assayer, Granby Consolidated Mining, Smelting & Power Co.

though in general I believe that where the coal is of a soft, friable nature, sizing after washing is best, as it means a cheaper initial outlay, and the breakage is reduced by sizing the coal but once.

The jig bed at Cassidy is carried deep enough to prevent too great a loss of fines—12 to 14 in. in the first compartment and 10 to 12 in. in the second. The material that goes into the hutch is chiefly fine rock and clay of a minus $\frac{5}{16}$-in. mesh. If for any reason the bed becomes thin, as sometimes happens, some fine coal of this size is lost. In the jigs coal passes over with the impurities, as the specific gravity of these is not far removed from that of the coal; also because the impurities are in large part of a flat, thin, flaky character, the buoyant effect of the water being greater on this material than on the mass of the particles. Consequently the ashy material is not well separated, many of the flat particles being washed over with the coal. Another source of trouble is that the carbonaceous clay, which is associated with the coal, forms a slimy, pasty mass with the jig water, and is difficult to eliminate. The coal becomes coated with a film of this mud, which gives it a bad appearance when dry and tends to increase its ash content. Spraying this coal has a beneficial effect.

From the jigs the coal goes to a revolving screen, where the washed nut and pea are separated from the slack. The pea goes into the washed-coal bin with the washed slack, the nut being taken to the washed-nut bin or loaded directly into railroad cars.

The washed slack from the jigs, after being screened out from the nut and pea, is run into the sludge tank, whence it is passed by an elevator and conveyor to mechanical feeders which feed it to the tables. A screen analysis of the table feed is as indicated in Table III.

TABLE III. SCREEN ANALYSIS OF TABLE FEED

	Percentage		Percentage
+ $\frac{5}{16}$-in. mesh	0.0	+ 40-mesh	15.9
+ $\frac{1}{4}$-in. mesh	2.6	+ 60-mesh	6.7
+ $\frac{1}{8}$-in. mesh	34.2	— 60-mesh	10.6
+ 20-mesh	30.0		

The tables used are of the Deister-Overstrom type, each handling from four to six tons per hour, with a recovery of from 88 to 93 per cent. A screen analysis of the washed slack and of the refuse from the tables is shown in Table IV.

TABLE IV. SCREEN ANALYSIS OF TABLE DISCHARGE

	Washed Slack Percentage	Refuse Percentage		Washed-Slack Percentage	Refuse Percentage
+ $\frac{5}{16}$-in. mesh	0.0	0.0	+ 40-mesh	14.6	20.4
+ $\frac{1}{4}$-in. mesh	5.2	...	+ 60-mesh	3.7	13.0
+ $\frac{1}{8}$-in. mesh	27.6	23.4	— 60-mesh	2.9	14.2
+ 20-mesh	46.0	29.0			

Fine coal passing through $\frac{5}{16}$-in. openings and smaller is most satisfactorily washed on tables; but in this field a preliminary washing in jigs is advantageous, especially where carbonaceous shale and clay occur in quantities, for quite a percentage of it is eliminated through the hutch, and by carrying a good jig bed, little fine coal of good quality is lost. No hard and fast rules can be made regarding table washing of coal, especially coal in this field. Various adjustments will be necessary before a combination is found that will give the desired results. These adjustments are chiefly for the following: (1) Speed, or number of strokes per minute; (2) length of stroke; (3) horizontal inclination or elevation of the table; (4) its transverse inclination; (5) quantity of feed; (6) regularity of quality of feed; (7) amount of feed water, and (8) amount of dressing water. All these have their effect on the efficiency with which the coal is washed.

The mechanical feeding mechanism in use at this washery has been worked out on the plant to suit the conditions. It gives a regular, steady feed. This is highly essential in table washing, if a good separation is to be obtained. The impurities to be eliminated are about the same as in the jigs, viz., rock, bone, clay and shale; and here again, owing to the fact that both the coal and the impurities have a wide, and to some extent overlapping, range in specific gravity, trouble is often incurred by coal going over with the refuse. Especially is this true if the tables are crowded or overloaded and if the feed contains an excessive quantity of fines, more particularly if the fines contain quantities of carbonaceous shale and clay. I have found that with this class of coal from four to five tons per hour is the greatest feed that is, in general, consistent with good washing.

The usual indication of good washing is clean washed coal and a high-ash rock. This, however, does not quite hold true here, for it has been found that a high-ash rock usually gives a high-ash washed coal, the reason being that some of the lighter refuse, such as shale and light bone, has floated over the riffling with the coal, while only the heavy—that is, high-ash—bone and rock go out with the refuse discharge. Test samples must be taken at frequent intervals and daily assays for ash must be made, in order to determine the loss of coal and to work as economically as possible.

From the tables the washed coal goes to a dewatering conveyor and thence to the washed-coal elevator and into the washed-coal bin. The fines from the upper and lower decks of this dewatering conveyor (which serves as a conveyor of raw feed to the tables and also as a conveyor of washed coal away from them) are passed to two other tables, where they are washed. The fines from the top deck are unwashed coal, while those from the bottom deck are fines that have been washed over with the coarser slack. Screen analyses of the feed, washed coal and refuse from these tables are given in Table V.

TABLE V. SCREEN ANALYSES OF FINE COAL, UNWASHED AND WASHED, AND OF THE REFUSE

	Feed Percentage	Washed Coal Percentage	Refuse Percentage
+ $\frac{5}{16}$-in. mesh	0.0	0.0	0.0
+ 20-mesh	23.5	26.4	20.7
+ 40-mesh	35.7	40.1	19.0
+ 60-mesh	23.6	20.0	19.0
— 60-mesh	17.2	13.5	41.3

These tables can each handle from six to seven tons per hour, the feed averaging 21 per cent ash, the washed coal 14 per cent and the refuse 45 per cent, a reduction of 33 per cent of the original ash content. The greater capacity of these tables, as compared with the others, is attributable to a better classified feed. A recent test gave the results shown in Table VI, and, as will be seen, the recovery was 94.6 per cent.

TABLE VI. PRODUCT OF TABLES TREATING COAL ONE-SIXTEENTH-INCH MESH AND UNDER.

Washed slack	13.44 tons per hour
Refuse	0.76 tons per hour
	14.20 tons per hour

The washed coal from these tables is conducted over a dewatering screen and thence to the washed-coal elevator. The wash water for the jigs is used over and over again, but the water for the tables comes from a Dorr thickener, which clarifies the overflow wash water from the jigs, sludge tank and elevating conveyor.

The water flowing into the thickener usually carries 6 per cent of solids with an average ash content of 35

per cent; the clarified water leaves the thickener with 0.15 per cent solids, a clarification of 99.9 per cent.

A screen analysis of the thickener discharge is as in Table VII.

TABLE VII. SCREEN ANALYSIS, THICKENER DISCHARGE

Size	Percentage	Ash Percentage	Size	Percentage	Ash Percentage
+ 20-mesh	0.0	*	+ 100-mesh	5.00	18.75
+ 40-mesh	0.25	*	+ 200-mesh	35.00	25.60
+ 60-mesh	3.00	14.22	— 200-mesh	49.75	36.20
+ 80-mesh	7.00	16.97			

* Combined with + 60-mesh.

This gives an average ash of 29.4 per cent. The dilution of the discharge is 44.3 per cent solids, which amounts to about 100 tons per 24 hours. The inflow water is passed into an experimental oil-flotation cell. Regarding coal flotation the experimental results thus far are satisfactory, but some further work is necessary in order to complete details for good economic working results.

Details of float-and-sink tests (Tables VIII and IX) are given so that the results of washing may be seen at a glance. From them, also, the difficulties of washing Vancouver Island coal will be appreciated. In Table VIII the raw feed to the jigs is in all cases minus 2-in. mesh material, and the solutions in the several tests have the specific gravity indicated.

TABLE VIII. FLOAT-AND-SINK AND ANALYSES OF RAW FEED TO JIGS

Specific Gravity of Solution	Float and Sink	Percentage	Ash Percentage
1.3	Float	38.5	7.21
	Sink	61.5	29.38
1.4	Float	71.5	10.67
	Sink	28.5	42.69
1.5	Float	77.5	12.58
	Sink	22.5	49.21
1.6	Float	87.5	15.61
	Sink	12.5	56.50
1.7	Float	88.0	18.10
	Sink	12.0	66.08

The average ash of the sample used for this test was 20.66 per cent.

TABLE IX. TEST ON RAW FEED, WASHED COAL AND REFUSE

Raw feed to jigs				
Sample 22.80% Ash	Float	56.0%	Ash	9.38%
	Sink	44.0%	Ash	43.43%
Washed coal from jigs				
Sample 14.30% Ash	Float	77.67%	Ash	10.16%
	Sink	22.33%	Ash	26.68%
Refuse from jigs				
Sample 67.05% Ash	Float	2.5%	Ash	16.00%
	Sink	97.5%	Ash	68.16%

Float and sink tests on table products

	Float	Ash	Sink	Ash
Feed to tables	59.00%	10.00%	41.00%	40.00%
Washed slack	71.00%	9.50%	29.00%	31.32%
Rock	4.00%	14.65%	96.00%	46.60%

Float and sink tests on tables washing fines from dewatering conveyor

Feed to tables	Float	69.0%	Ash	12.50%
	Sink	31.0%	Ash	41.49%
Washed slack	Float	70.0%	Ash	11.10%
	Sink	30.0%	Ash	35.20%
Refuse	Float	1.5%	Ash	20.67%
	Sink	98.5%	Ash	53.73%

I hope by these notes to convey some idea of the complexity of Vancouver Island coal and the difficulties encountered in preparing it for the consumer's use. It may not be out of place to call attention here to the lack of knowledge on the part of consumers of coal, especially the domestic consumer, regarding the value of the smaller sizes, as now prepared by the island washeries, as compared with lump coal, which is now in chief demand for domestic use. Lump coal commands the highest price, but after buying it the consumer immediately breaks it into smaller sizes, often making considerable slack or fine coal. Washed No. 1 and No. 2 nut and pea coal are eminently suited for domestic consumption, being quite equal in calorific value to lump, with the added advantage of being much cheaper.

A NEW INVESTIGATION, to determine the composition of the gas arising from a fuel bed, is under way at the Pittsburgh Experiment Station of the U. S. Bureau of Mines.

Concrete Switch Boxes Cheaper and More Efficient Than Brick-and-Mortar Boxes

BY ALPHONSE F. BROSKY
Pittsburgh, Pa.

THE first paragraph under Item 53 of the Pennsylvania Bituminous Coal Mine Compensation Rating Schedule, entitled "Contact Hazards," contains the following provisions: "All electrical material shall be of an approved make, and be firmly placed in secure and workmanlike manner. All switches (except trolley-wire switches) shall be of an enclosed type and operated by an insulated handle." The subject of the paragraph, "Contact Hazards," indicates the aim of this ruling. It is urged that precautions be taken to protect men when in the act of throwing a switch, and this protection is obtained most readily by the use of switch boxes.

Boxes placed in the rib should be provided for the housing of feed-line switches. These usually are of brick and mortar and built in place. A box of this character, however, has its drawbacks. To show this an every-day example may be taken. The face of a butt entry has advanced far enough for permanent wiring, and the electrician is given the necessary instructions. He looks over the situation and decides upon the best location for the switch, indicating its position with chalk. Someone is set to work digging a hole in the rib to receive the switch box. Only a small amount of material is needed

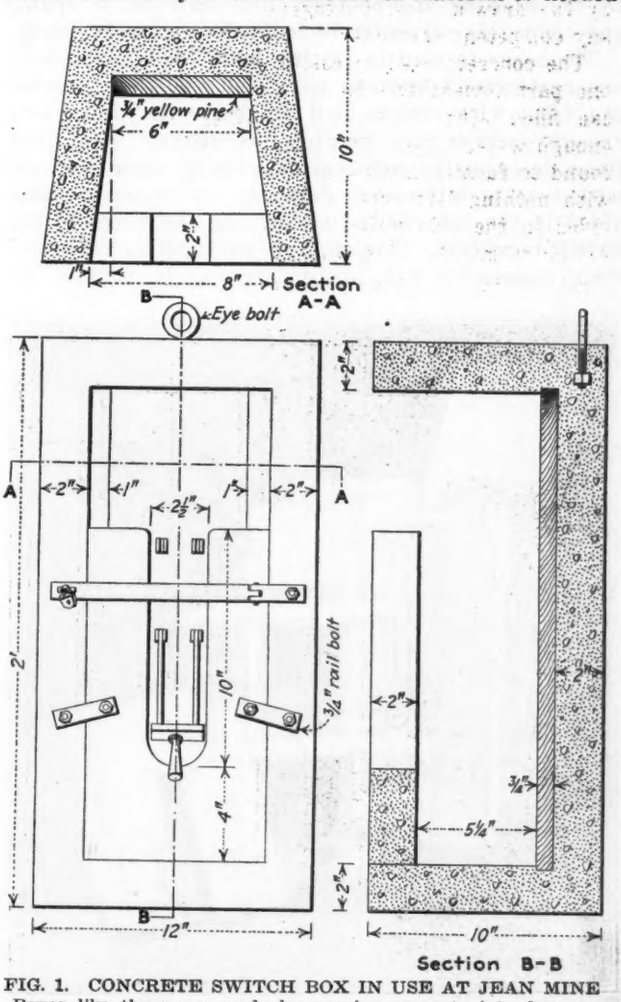


FIG. 1. CONCRETE SWITCH BOX IN USE AT JEAN MINE

Boxes like these are made by pouring concrete into forms at some convenient place on the surface. They can be set in a niche in the mine rib and can be locked in such manner that the current cannot be re-established till the man who has the key returns. The electrician is thus protected in making repairs.

for the job, but much time is lost in bringing it in. Any excess of material usually is scattered and wasted. This loss may amount to only a few cents, but it is tangible, nevertheless. A mason then proceeds to build up the switch box, usually taking from two to three hours to complete the job.

Even after this box is finished it is not as serviceable as one of concrete. In most instances it has no door, and in any case is not water resisting. Furthermore the switch grip may become charged because of the dampness. Locking arrangements are seldom provided and are difficult to embody in this type of construction. When a section is abandoned and no further use can be made of the switch or the box, the concrete box may be salvaged, but the one built in place is a total loss.

At the Jean mine of the Bertha Coal Co., at Dinsmore, Pa., concrete switch boxes are used. Constructed and installed at small cost, they are nevertheless more desirable and efficient than if constructed of brick. The forms utilized in pouring may be constructed of ¾-in. yellow pine or similar material and used over and over again. These forms are collapsible, the various members being so hinged and hasped together that they may be loosened and drawn away from the finished casting. The chief dimensions of the concrete box are given in Fig. 1, and the method employed in fastening the several parts of the outer and inner forms as well as that for the door is shown in Fig. 2. The information conveyed by the drawing and photograph is sufficient to enable any competent carpenter to build the necessary forms.

The concrete used in casting these boxes consists of one part cement and one part sand. A 25-lb. powder can filled with cement and another with sand, with enough water to give the proper consistency, have been found to furnish a sufficient quantity to make one box, with nothing left over. Porcelain insulators are provided in the side walls for carrying the wires to the switch terminals. Insulators so damaged as to render them useless for wire suspension may be utilized for this purpose. The intact portion is chipped straight and to a length of about 2 in., this being the thickness of the walls of the box. These insulators are held in place during the pouring by the insertion of small rods through the box form, from which the insulators are suspended. Four insulators, two in each side wall, are provided, although only two wires enter the box. The four openings provide exits for the wires, one or two on either side.

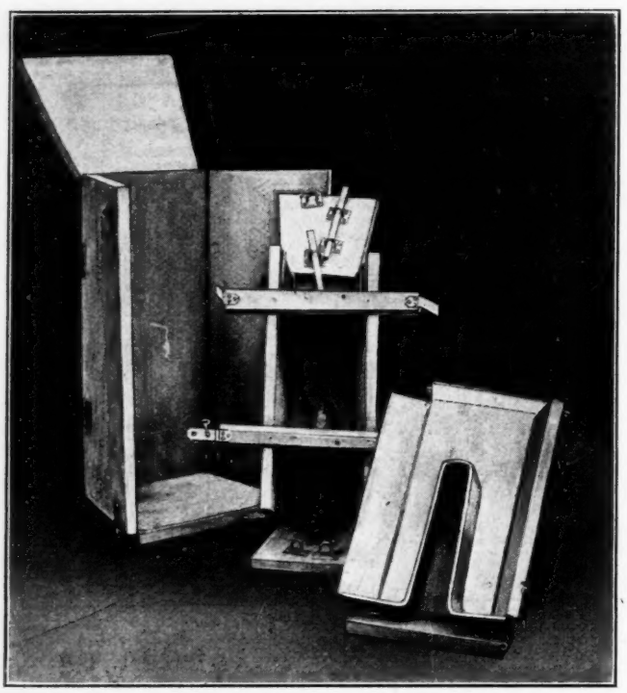


FIG. 2. FORMS USED IN CONSTRUCTION OF SWITCH BOX
Once made these forms may be used over and over again. A good carpenter should build one in less than a day. The form to the right is used in pouring the door.

For fastening the cross bands which secure the door and lock the switch ½ x 3-in. bolts are used. These are set in place by hand after the concrete has been poured. The door containing the V-shaped opening is reinforced with wire or any other suitable material. The side walls of the cope or center box form are not hinged to the bottom board. These pieces are securely fastened to the form blocks or partitions below the arms, these blocks in turn being fastened to the bottom or floor board by means of hinges.

The ends come away entirely and are held to the side walls by means of hasps. The bottom or floor board is well shellacked before assembling the form, and projects slightly beyond the end boards. After the concrete has set, the screws are removed from the hinges connecting the floor board with the two partitions, the hasps are unfastened and the endpieces withdrawn. Finally the side wall and partition unit is lifted, leaving the floor board of the cope embedded in the concrete. It then acts as a panel or baseboard upon which the switch is mounted.

The hinged walls of the drag, shown on the left in the illustration, fall away from the concrete casting, as do also those of the door form shown on the right. The metal U-form is made of steel strap salvaged from a discarded mine car.

The time required to complete one box, including the mixing and pouring of the concrete, and the setting of bolts, insulators and reinforcing material, is forty minutes. This work may be done at odd times in one of the shops, and a number of the boxes kept in the supply room, so that they may be installed at short notice. The cost is approximately $1.50. This includes labor and material, with the box complete except for the switch itself.

These boxes will not only be used in room entries for feed-line switches but also on the main haulage roads for trolley cut-outs. Open trolley-wire switches are a source of danger because in throwing one of them the operative must stand directly over a rail, his hand meanwhile coming within a few inches of the wire. This risk may be obviated by wedging a box of the kind just described into a niche in the rib and connecting it with the trolley wire by means of lead lines. Lights on the inbye side will show whether the switch is on or off.

If an electrician cuts out a section of the mine in which repairs are to be made and the switch is of the open trolley-wire type or even an enclosed type with no locking provisions, his only protection is to hang up a danger sign. The use of the concrete box just described eliminates this hazard, as the switch may be effectively locked out, the electrician carrying the key in his own pocket.

COAL AGE INDEX

The indexes to Coal Age are furnished free to all who ask for them. The index for the last half of 1921 is now ready for distribution. A copy can be had by addressing a postcard to the subscription department of Coal Age.

Book Reviews

A Life of George Westinghouse

DESIRING that the notables of the mechanical engineering profession in America be duly celebrated, the American Society of Mechanical Engineers has commenced the publication of a series of monographs on the leading members of the society. The first of these, the "Autobiography of John Fritz," was published in 1912. The "Life of George Westinghouse," by Henry G. Prout, is the second of these publications, which is published by Scribners, and excellently has Colonel Prout performed his task.

As a rule the lives of great inventors do not fail of adequate chronicling, but it is possible hereafter that there will be men of wonderful achievement who will be in danger of doing their life-work, revolutionizing industry and being left without adequate recognition, for so intricate are modern inventions that only experts are now able properly to evaluate them. Discoveries and inventions which founded new industries and manifestly modified our manner of living will always find chroniclers, but men who take up the study and development of older industries and give them a new importance and value are regarded as merely developers and get little credit for a vision and an inventiveness in no way less marvelous than that displayed by those who first gave birth to the industry.

In regard to Mr. Westinghouse, he was in many matters so greatly a collaborator that his own contribution was often overlooked, and he is apt to be regarded as merely the manager of the activities of the remarkable group that his genius gathered around him.

In the early days, when lack of funds denied him opportunity to assemble around him leaders in all lines of research, George Westinghouse stood out as an inventor more clearly than in middle and later life. "Westinghouse" then got too often to mean the association of brilliant minds that his genius assembled and led, rather than Westinghouse himself. Those earlier years saw the development of the air brake, with which his name will ever be associated. But it is not with the design and construction of brakes that would bring a train weighing 300 tons in weight to rest from a speed of thirty miles an hour in the short space of 500 ft. that most readers will be most interested, though the work of disproving, with the aid of Captain (later Sir) Douglas Galton, the old Morin law that friction was independent of velocity has its bearing on all locomotive engineering, mine and other. The tests in Great Britain fully proved that the brakes should not be so strongly applied as to cause skidding and that on first application the pressure of the brake should be greatest, as the speed at that moment is highest and the friction resulting from the pressure of the brake is accordingly at a minimum.

In 1881 George Westinghouse took out a patent for automatically regulating either the engine or the dynamo in response to change in load, thus starting his work in the electrical field. Of that work Mr. Prout says:

> In the field of electricity he was not an inventor of fundamentals. He invented many useful details, but his great work was in stimulating, combining and directing the work of other men. When he entered the field he was already a world figure; a loadstone attracting from all directions. No other man combined the resourcefulness, the contact with scientists, the ardor for electrical development, the manufacturing plants, the organization of men in many groups, the vision, the optimism, the courage and the will to bring things to pass. Known the world over, he was the receptacle of the thoughts and ideas of scientists and inventors everywhere. He was the captain of them all, the man who received and co-ordinated and executed.

Westinghouse soon associated with him William Stanley and entered the electric-lighting field, buying up the company holding the patents of Sawyer and Man, which patents covered the carbonizing of paper and other fibrous materials in the form of an arch, soon, however, to be rendered of little avail by Edison's patents on a carbon filament in an exhausted container made wholly of glass, and not containing a stopper. In 1886 Westinghouse direct-current incandescent-lighting plants were installed in the Windsor Hotel, New York City, and the Monongahela Hotel, Pittsburgh, Pa. The first central-station Westinghouse equipment was installed at Trenton, N. J., the work being begun in May of that year. But Westinghouse's main accomplishments were to be in alternating-current development, in which he firmly believed and from which no discouragements could divert him.

Those who have become accustomed to large units for the generation of electricity will be interested to learn that only as far back as 1890 the largest generator ever built was of 250 hp. The armature shifted as much as an inch on the smooth cylindrical core. Despite the opposition to slotted armatures then prevailing, Westinghouse decided to adopt them to correct this failing, and they soon superseded all other types. Belt connections were soon succeeded by direct connection of engine and armature shaft.

The introduction of the transformer into America and its reconstruction as a practical electrical appliance from the form in which it was designed by a Frenchman, Lucian Gaulard, was another early achievement of Westinghouse. Stanley, still one of the Westinghouse engineers, built up the transformer core of E-shaped plates. Albert Schmid, another Westinghouse engineer, abandoned the use of paper as a means of avoiding eddy currents and found that the natural oxidation of iron plates was a sufficient insulation. Westinghouse himself invented the ventilated core to prevent overheating and the well-known oil-cooled transformer of the present time. This was in 1886, and in November of that year the Westinghouse Co. installed in Buffalo the first commercial plant employing the alternating-current system. The Stanley alternator and the Stillwell "booster," or "regulator," soon followed.

Would Have Barred It Even from Surface

Thus were the mechanical difficulties of operating with alternating current overcome. With equal determination Westinghouse met the cry that a form of current believed to be so potentially dangerous should not be harnessed for the public good.

It will be hardly permissible to discuss in detail Westinghouse's services in the development of the induction motor, for which patents were issued to Nikola Tesla on May 1, 1888. The labor of putting this new industrial implement on the market nearly swamped the Westinghouse Electric Co., five years later. In the same month and year that Tesla patented his motor, O. B. Shallenberger, chief electrician of Westinghouse's company, developed his alternating-current meter.

The rotary converter was another development of the Westinghouse associates. Originated by Siemens & Halske, it was given its present form by B. G. Lamme, of the Westinghouse organization. Other directions in which Westinghouse was active was in the making of gas engines and steam turbines, the single-flow turbine of Parsons becoming the single-double flow or impulse-reaction turbine of Westinghouse. Naturally the turbo-generator was an offshot of this machine.

To review the rest of the activities of Westinghouse would take no less a space than Mr. Prout has afforded it in his well-digested volume. It is needless to say they cover natural gas, fuel gas, the Westinghouse producer, the Nernst lamp, the Cooper-Hewitt lamp, the multiple-unit control, by which the several cars of an electric train can be controlled from the foremost car; improved car, air and electric couplings on trains, telephony, an air spring for automobiles, steel cars for railroads and signaling and interlocking switches. The appendix of patents at the end of Colonel Prout's book shows that Westinghouse took out a patent about every six weeks for forty-eight years.

The author of the book reviewed, Colonel Henry G. Prout, before joining the Union Switch & Signal Co., of which he later succeeded Mr. Westinghouse as president, had made a name for himself as one of the greatest editors in the technical publishing field. This experience and his business relationship with Mr. Westinghouse gave him an unusual fitness for this biographic work.

Problems of Operating Men

Edited by James T. Beard

Right and Wrong Ways of Laying Room Switches

Location of Frog by Spads on Entry, in Line with the Inby Rail in Room—Uniform Curve of Switch Track—Wrong Methods of Laying Switches Give Much Trouble in Operation

AS TRACK foreman for one of the largest coal companies in this field, I have been interested in the several references to the laying of mine-room switches, which have appeared at different times in *Coal Age*.

There are right and wrong ways of laying room switches. A wrong method is sure to give much trouble in the operation of the mine. Frequent delays will be caused by the derailment of cars passing in and out of a room where the switch is not properly laid.

All of this can be avoided if the trackman in charge has had the experience required for that class of work. Too many switches today are being laid by timbermen or other daymen who have little or no knowledge in regard to what is required in laying a good switch.

Important Points to Be Observed in Laying a Room Switch

Permit me, then, to offer a few suggestions and describe briefly some of the important points that must be observed if the work is to give satisfaction when finished. These points are few and simple and may be outlined as follows:

In order to make my meaning clear, I have prepared a sketch showing three forms of room switches most commonly found in mines. The first of these (a) shown on the left of the figure, illustrates a switch that has been properly laid at the mouth of a room turned off a main road.

The two figures (b) and (c), on the right of this one, each reveal common errors, in the location of the switch, that often cause trouble and annoyance to drivers, even when no actual derailment of the car takes place.

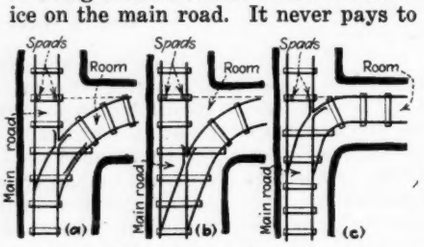
Spads Set on Entry in Line with Track in the Room

Describing these methods more in detail, let me say, it will be observed the spads have been set in the entry, in each case, in line with the inby rail in the room; or these spads may be set in line with the inby rib of the room, if desired.

Having located the spads, in the roof or timbers, on the main road, it is my practice to start the work by lining up the track and surfacing it so as to bring it to proper grade in the entry. If there are any bad rails these are replaced with good ones and this is all done before making any move to lay the switch.

Utilize Short Pieces of Rails

In laying a room switch there are always required some short pieces of rail. The next step, therefore, is to look up these short pieces, which are always to be found in a large mine, as the result of track rails being broken by wrecks or being otherwise made unfit for service on the main road. It never pays to



ILLUSTRATING GOOD AND BAD SWITCHES

cut a good rail if these short pieces can be found.

The use of different track gages or having different widths of entry and the manner of turning rooms will, of course, give different dimensions for the length of lead rail and number of frog to be employed.

In our mine, with a 10-ft. entry, a 2½-ft. track gage and using a No. 2 frog, it is my custom to locate the point of frog about 9 ft. outby from the spads and use a 9-ft. lead rail. I am careful to lay the switch rails to a uniform curve, from the point of switch to the line of straight rail in the room.

A common error, in laying a mine switch, is to locate the point of frog at too great a distance from the spads, as shown at (b), in the figure. In that case, the tendency is to use a No. 2½ or No. 3 frog and the lead rail is run practically straight across the main road to the frog, before the curve leading into the room is started.

Again, as shown at (c), we often find a frog located at too short a distance from the spads and the lead rail lengthened. In both this case and the last one mentioned, the curve in the rooms is too short to give good service.

In any case, if the rails are not well lined up, the curve made uniform and the road well ballasted, derailment of cars is almost certain to follow.

G. W. Breeden, Track Foreman,
U. S. Coal & Coke Co.
Thorpe, W. Va.

Electric Cap Lamp for Miners

Safety lamp a handicap to the miner—Electric cap lamp safer—Enables the miner to produce more coal—Use of open lights dangerous.

PERMIT me to offer a few remarks commending the stand taken by Gaston F. Libiez in *Coal Age*, Nov. 24, p. 847, in reference to the passing of the miner's safety lamp as used by them at the working face.

For all general purposes I consider the safety lamp a handicap to the miner. I believe the constant use of the lamp tends to injure the eyesight and it is well known that it gives a poor light for the detection of bad roof, to which danger the miner is constantly subjected.

In my opinion, there should be a law, compelling all coal operators to equip their mines with electric cap lamps of a form approved by the Bureau of Mines, and restricting the use of the safety lamp to the examination of the mine for gas by firebosses.

As stated in the letter to which I have just referred, the Mine Inspectors' Institute of America recently passed a resolution recommending the disuse of the safety lamp, except for the purpose of testing for gas, and urging the use, by miners, of electric cap lamps instead. Coming from such a source, the recommendation is well worthy of the earnest consideration of every coal operator.

Greater Safety Assured by Use of Electric Cap Lamps

If our mines were equipped with electric cap lamps, the better light afforded would enable the miners to do more work and under safer conditions, provided their places were examined by competent firebosses, or safety inspectors, using safety lamps, say three or four times a day, during the working hours.

Under no conditions should miners be permitted to use open lights at the working faces. The mine may not be classed as a gaseous mine; but there is never any certainty as to when gas may appear in a mine that has never been known to produce gas before.

An incident that occurred in my own experience very forcibly impressed this fact on my mind when serving as mine

foreman, at a mine where open lights were in use. No trouble had been experienced previously; but one day a miner's place struck a fault in the roof, which opened a gas feeder that was quickly ignited by the man's open light.

I was present in the place when this occurred and, by hard work, we were able to put out the feeder. As the place was making much gas, however, I at once ordered all lights in that vicinity extinguished and fenced the place off until the feeder should exhaust itself, which it did in a few days.

SUPERINTENDENT REFUSES APPEAL

My appeal to the superintendent to provide electric cap lamps for the miners was refused and I was given the choice of continuing to work the mine with open lights or give up my place, which I did a little later, as the men refused to work with safety lamps.

Had there been a law compelling this mine to be equipped with electric lamps, I would not have been under the necessity of resigning my position, by reason of my difference of opinion with the superintendent. It would be better if our mining laws controlled all mines, large and small. In many of the smaller operations the conditions are very bad and often quite unsafe.

In my opinion, there is no reason why a mine employing but two men should not come under the law as much as an operation employing ten or more men. Are not the lives of those two men as important as the lives of two other men working in a larger mine where they are safeguarded by the provisions of the law?

My observation of conditions in these small mines leads me to hope that the time will soon come when they will be compelled to comply with the requirements of the law, the same as larger operations. MINE FOREMAN.

———, Pa.

Use of Salt to Keep Mine in Damp Condition

Salt sprinkled by hand on timbers, floors and ribs proves satisfactory—Applied once a month—Cheaper than sprinkling with water — Generally more effective in allaying dust.

REFERRING to the interesting letter of a Chicago engineer inquiring with regard to the use of salt in mining practice, and the reply published in *Coal Age*, Jan. 26, p. 172, permit me to offer the following as the result of our own experience:

Some time since we were having more or less trouble with the dust question in our mines and at the suggestion of one of our mine foremen we used salt, in certain districts of the mines, to keep the dust damp. We have found this very satisfactory. It is an inexpensive method of obtaining the desired amount of dampness as compared with what would have been the cost to regularly sprinkle these districts.

We have five pairs of entries employing mule haulage, and being robbed back. These entries are some distance from any water supply and would require, when sprinkling at night, both mule and motor haulage to handle the sprinkling outfit. Owing to low timbers and heaving bottom, it was found that it was expensive business to get the sprinkling outfit to the face and, for this reason, we tried the salt with good results.

SALT SPRINKLED BY HAND

The salt is placed by hand, care being taken to get it over the tops and behind the legs of timbers, along the gob and on both ribs. One application will last thirty days. If we sprinkled with water the job would have to be done twice a week. In experimenting with salt, in advancing entires the salt maintained a dampness for over sixty days.

We think that the use of salt is of particular value in robbing work, as the dampness remains in the dust and gob after the pillars have been removed. Also you can put the salt where it will do the most good or where it is needed the worst; and this is hard to do under bad roof in robbing work, with a sprinkling outfit. We have used this for over two years now.

———, Tenn. MINING ENGINEER.

Solid Shooting vs. Machine Mining

Relative merits of solid shooting and machine mining—Solid shooting requires more skill than that of the average miner—Advocated chiefly to lower cost of production.

AFTER reading the excellent letter of William Crooks, *Coal Age*, Nov. 17, p. 806, I must confess being at a loss to know whether I would favor shooting coal off the solid or mining it by machines which has always been my preference.

Since reading the arguments advanced by that writer, I have given the matter much thought, but am still a strong advocate against the practice of solid shooting. Referring to the numerous accidents in Alabama mines, Mr. Crooks states that these have all occurred in machine mines. His inference that machine mining is responsible for those accidents is, however, in my opinion, wholly wrong.

SOLID SHOOTING NOT THE CAUSE OF EXPLOSIONS IN ALABAMA

Allowing that these accidents all occurred in machine mines, is it not more than likely that they were due to the fact that the mines were more developed and putting out a larger tonnage, which would increase their liability to accident, as compared with smaller operations shooting the coal off the solid and having a lesser output.

There is a trick in solid shooting if the work is to be performed safely. In my opinion, few miners are experts at the business, or can boast of their proficiency in getting good results when following this practice, which unfortunately has many advocates among the higher mining officials.

It has been my experience that to shoot coal off the solid consumes more powder, per ton of coal mined, and causes more roof to fall than where the coal is properly undercut or sheared. The reason is that the powder must do more work to break down the coal and, on that account, exerts a much greater force against the roof, which is weakened and falls readily.

When Mr. Crooks referred to the "differential" existing between solid shooting and machine mining, he uncovered a sore spot. The differential in these two practices of mining coal is the real reason why a large number of miners prefer solid shooting to having their coal cut by machines.

Indeed, I have wondered how it was possible to keep mining machines in the Illinois northern field, with the present existing differential. Reflecting on these conditions, it has occurred to me that my friend in Alabama may not be wholly disinterested when he expresses a preference for shooting coal off the solid.

MACHINE DIFFERENTIAL IN ILLINOIS

In Illinois, the pick-mining rate is $1.37 per ton and the miner is paid, for 2 ft. of brushing, at $7.50 a day. On the other hand, in machine mining, the miner receives from 91½ to 93c., per ton of coal, and there is no brushing.

The coal varies from 36 to 42 in. high and often contains blackjack or bands of sulphur that the machine must cut. At the best, a crew of three men will cut an average of four places per shift, allowing for an occasional breakdown of the machine and other delays.

Each place cut is 42 ft. long and, allowing 27 cu.ft. per ton of coal, a 4½-ft. cut, in four places, would yield about 90 tons. The machine runners rate being $8.04 per shift, makes the cost for cutting the coal $(3 \times 8.04) \div 90 =$ say 27c. per ton, to which must be added the cost for maintenance and repairs.

MACHINES DISCARDED FOR SOLID SHOOTING

Lately I was promised the charge of a machine mine and the superintendent informed me that he was going to discard the machines he had and use solid shooting. He stated that the miners were pulverizing their coal with heavy shots. It was difficult for me to understand this, as competent shotfirers were employed in that mine to shoot the coal at night.

My conclusion is that where a company is able to install machines, the mine is better managed and the work performed in a more business-like manner all around. The ventilation is more efficient; a minimum amount of explosive is used and the danger of solid shooting eliminated.

It is my belief that the near future will see less raw coal used in industrial operations and the production of lump coal will be less important. Present methods of mining coal will give way to modern machinery for extracting the coal in quantity and eliminate the use of powder for blasting it from the bed.

Peru, Ill. GASTON F. LIBIEZ.

Imagined Difficulties of Miners

Pension fund for disabled miners—Age limit set by few companies—A miner's best and most reliable capital is his code of honor.

I HAVE read with deep interest the two letters of Western men, one signed "Western Miner" and the other "Western Inquirer," appearing in *Coal Age*, Dec. 29, p. 1055.

The plaint of the last writer is pitiful indeed, but it seems to me that he does not realize present conditions in the world today. He fails to understand that he is surrounded on every hand by men of little knowledge and I would say, also, having a low grade of morals.

The letter of the first writer reminds me of an idea I suggested some time ago, in regard to maintaining a fund for disabled and aged miners, as a means of protecting honest workers from the unjust trespassing on their rights by those of their fellows who are less conscientious.

MINERS' PENSION SYSTEM, C. F. & I. CO.

This writer has mentioned the pension system adopted by the Colorado Fuel & Iron Co., which he discussed at considerable length. It is not my desire to in any way criticise that system or to reflect on the sincerity of the company who planned it.

My experience of ten years, in that country, leads me to say that the writer has only spoken the truth in what he has said regarding the working of the system. For myself, I fail to see how the honest worker is protected against the less conscientious fellows about him.

Let me ask, How are the higher officials of the company to understand the actual conditions in the mine, unless they make frequent visits to the mine, going into the workings and coming into personal contact with the men in their employ?

It is true, that there is a grievance committee that is supposed to report all matters and conditions as they exist in the mine; but it cannot be said that such a committee is an impartial court of inquiry, and the fellow who is not in favor with them suffers by reason.

PAST EXPERIENCES OF A MINER

Looking back on my own experience in life, I cannot but sympathize with the second writer who seems to think that his knowledge and habits of life should insure him better recognition than he has yet received.

To make a long story short, some years ago I gave way to dissipation and sank into the gutter; but an endowment left me by my parents, in childhood, prevailed and saved me from destruction. Let me say, for the encouragement of our friend, the miner's best and most reliable capital is his code of honor.

At the payroll window, a few days ago, the fellow ahead of me drew $137 and, though he has no family or other dependents, spent it all with gamblers and bootleggers so that two days later he had to ask me for carfare to get him home. It is this class of workers that is doing the coal industry a vast harm. Let us try to clean house by eliminating such.

HENRY BOCK.

Staunton, Ill.

Inquiries Of General Interest

Mining Coal in Vicinity of Gas Wells

Gas and Oil Wells in Mining Districts a Menace to Safety—Ways and Means of Eliminating the Danger—Legislation Needed for Protection of the Coal Industry—The Evil on the Increase

RECENTLY much anxiety has been expressed regarding the danger that is imminent from the mining of coal in the vicinity of gas and oil wells. Owing to the large increase in the number of these wells being sunk in mining districts, the question of adequate protection for the mines is one of growing importance.

For that reason, I desire to ask for an open discussion of the subject, by readers of *Coal Age*. It is probable that many of our readers have experienced the difficulties of mining in the vicinity of these wells and can offer good suggestions as to how the danger due to their presence can be best overcome.

It may be remarked, in passing, that the danger from this source is not limited to the life of the wells, but exists long after the wells have been abandoned. Moreover what makes the situation worse is the fact that seldom any records of abandoned wells are available, and their presence is only revealed when they are encountered in the driving of rooms and entries, in the development of the mine.

It would be of special interest to hear from those who, before mining, may have sealed off gas wells, from the surface to a point below the coal-bearing strata. Let us hope for a good discussion.

FRANK KAIN, JR.

Barton, Ohio.

We are glad to have attention again drawn to this question of mining coal in the vicinity of gas and oil wells, which at one time was a sorely vexed problem in certain districts of Pennsylvania where many such wells were sunk and later proved a serious menace to the mining of the coal in those localities.

Some eight or ten years ago, the matter was strongly agitated and discussed in *Coal Age*. The question, at that time, was brought before state legislators and suitable enactments sought to safeguard the coal industry.

There is no doubt that an old abandoned oil or gas well, sunk in a mining district, will continue to be a menace to the mining of coal, for years to come. To avoid this danger the drilling of such wells should be thoroughly prescribed by law. On the abandonment of a well, the law should specify that the hole must be plugged solid, from the bottom to the surface, with a grouting of clay or other impervious material that would stop the flow of gas or oil through the hole. To avoid all possible danger, every such hole should be filled to the surface. It is not sufficient that the filling extend only to a supposed workable coal seam, as has been claimed by some drillers and prospectors.

In addition to the filling of a well-hole, on abandonment, the law should provide that a careful record shall be kept and filed in the County Recorder's office, showing the exact location of all holes drilled and giving their depth. For failure to comply with these requirements, the law should provide a suitable penalty. We shall be glad to have this question thoroughly discussed in *Coal Age* and suggestions made looking to effective remedies that will eliminate this danger in coal mining.

Ventilating With Compressed Air

Driving prospect entry with compressed air machines—Good ventilation afforded by reason of the air discharged from the machine.

WE ARE confronted, at the present time, with the problem of driving an air-course through a fault of erosion where the coal has been cut out for a distance of 70 ft. or more. The arrangement is such that the men driving this air-course will be, for a part of the time, some 200 ft. ahead of the air. We are using puncher machines, in this work, and I want to ask if it will be safe to ventilate this heading with the compressed air used to operate the machines. Some one has said that compressed air is harmful to the men; but I fail to understand what bad effect, if any, the compressed air would have on human life. I shall appreciate seeing your reply to this question in *Coal Age*, at an early date.

ANTON FRANKE, Gen. Supt.
Star Coal & Mining Co.

Freeburg, Ill.

There is no danger to be feared in ventilating an air-course or heading with the air discharged from machines operated by compressed air. The only ill effects experienced by workmen, in

the use of compressed air, is where the men are compelled to work in a caisson, under an atmosphere of compressed air, which is not the case in the present instance.

The air discharged from these machines escapes as free air and affords excellent ventilation for the men driving the headings. When the machines are idle, or where the discharge is not sufficient to furnish good ventilation, it is customary to open a valve in the air pipe and allow more of the air to escape into the atmosphere.

In numerous instances in practice, headings have been driven several hundred feet, depending only on the ventilation afforded by the compressed air discharged from the machine, or allowed to escape from the air pipe. Many of our readers will be able to endorse this statement from their own experience and we shall be glad to hear from them.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—*A sump 10 x 12 x 22 ft. is being fed, by mine pumps, at the rate of 150 gal. per min., and is being emptied by a pump at the rate of 250 gal. per min. The sump being full and all pumps running, how long will it require to empty the sump?*

ANSWER—The cubic capacity of this sump is 10 × 12 × 22 = 2,640 cu.ft. There being 7.48 gal. in a cubic foot, the capacity of this sump is 2,640 × 7.48 = 19,747+ gal. Then, since the sump is being emptied at the rate of 250 — 150 = 100 gal. per min., the time required to empty the sump is 19,747 ÷ 100 = 197.47 min., or 3 hr. 17.47 min.

QUESTION—*A car of coal was sold at $2.50 per ton, which was a profit of 20 per cent. Another car was sold at $2.50 per ton, which was at a loss of 20 per cent. Each car holding 50 tons, did he gain or lose and how much?*

ANSWER—The selling price of each car was 50 × 2.50 = $125. The first car being sold at a profit of 20 per cent, the selling price is 120 per cent of the cost. The cost was, therefore, 125 ÷ 1.20 = $104.16⅔, which shows a gain of 125 — 104.16⅔ = $20.83⅓. The second car being sold at a loss of 20 per cent, the selling price, in this case, is 80 per cent of the cost. The cost price was then $125 ÷ 0.80 = $156.25, showing a loss of $156.25 — 125 = $31.25. Finally, the net loss is, therefore, 31.25 — 20.83⅓ = $10.41⅔.

QUESTION—*What effect will timber in a roadway have in the ventilation of a mine; and in what part of the airway will it last the longest and why?*

ANSWER—The timber in a roadway offers some obstruction to the passage of the air and, by increasing the resistance, reduces the circulation.

The timber on the intake airway will, generally speaking, last longer than that on the return airway, because it is less affected by the moisture of the mine, which invites fungus growth and shortens the life of the timber. Timber, on any airway or roadway in a mine, will last longer than timber in the rooms where it is subject to the increasing roof pressure, which crushes and destroys the timber.

QUESTION—*A fan driven by a steam engine supplies air in a mine through several miles of air-course. A door is suddenly opened allowing the air to go directly from the airshaft to the escape shaft. Would there be a change in the operation of the fan? State reasons for your answer.*

ANSWER—The opening of the door short circuits the air and cuts out the mine resistance, which reduces the pressure and increases the quantity of air flowing through the fan. The work then absorbed in the fan is much increased by reason of the greater rush of air between its blades and the fan runs slower, assuming the power applied to the fan shaft remains constant.

QUESTION—*What is meant by the term "deadhole"? What is meant by a windy shot?*

ANSWER—A deadhole, in blasting, is one in which the charge is located in such a manner that the line of least resistance corresponds more or less closely to the axis of the hole. In other words, the charge has no opportunity to free itself, except by blowing the tamping. A windy shot is one in which the force of the explosion is more or less expended on the air, instead of being wholly absorbed in breaking down the coal. A windy shot may only crevice the coal without breaking it down, but differs from a blownout shot in not blowing the tamping. A windy shot produces a heavy concussion on the mine air, which gives it its name.

QUESTION—*In a mine having extremely tender roof, state what precautions you would adopt to insure the safety of the employees and economy of operation, where electric coal cutting machines are used.*

ANSWER—To insure the safety of the machine runners, when operating an electric coal cutter under a tender roof, it will be necessary to adopt some means of supporting the roof close to the face of the coal. A systematic system of timbering should be employed, setting the posts not more than three or four feet apart in rows parallel to the face. To insure safety, the first row of timbers should not be more than four feet from the coal and the distance between each row should not exceed the same amount. This however, will require that each post be removed and reset, as the machine advances along the face.

Preferably, the coal should be undercut with a shortwall machine, which will require less room for the machine to pass between the timbers and the coal. In order to avoid the necessity of drawing and resetting the timbers to allow the machine to pass, some will prefer cutting hitches in the coal face at the roof to support one end of a crossbar, the other end of which is rested on a prop standing 6 or 8 ft. back from the coal. At times, a heavy crossbar is supported on a single prop, as a boom projecting over the machine and reaching within two or three feet of the face of the coal.

QUESTION—*There are eighteen rooms working on an entry. The miner in No.-10 room goes home, on account of sickness, early in the day and, later, you discover an explosive mixture of gases in his room. State what would be your method of procedure to protect the men and prevent an explosion.*

ANSWER—All entrances to the room should be barred, at once, on the discovery of the gas, and the men working in the adjoining places notified to leave their rooms. This being, done, and stationing a reliable man at the mouth of No.-10 room, all men working on that entry should be sent home for the day. No attempt should be made to remove the gas from the face of No.-10 room, until all the men have left the entry. The work of removing the gas should be in charge of a competent fireboss, who should be assisted with reliable men equipped with safety lamps.

QUESTION—*In order to secure proper ventilation of the working faces, what velocity should the air current have at that point?*

ANSWER—The velocity of the air current, at the working face, should range from 3 to 5 ft. per sec. While a less velocity will not be generally sufficient to remove the gases and keep the faces clear, a greater velocity than this will often make the men uncomfortable, unless the mine is very warm, when a slightly greater velocity may be allowed.

QUESTION—*Describe the conditions requiring that a mine be worked by improved electric lamps.*

ANSWER—Electric cap lamps are mostly regarded as the safest means of lighting the men while at work in a mine, whether that mine is generating gas or not. The lamp can always be used to advantage in a place generating gas, provided the working places have been and are examined at regular short intervals, by a competent fireboss equipped with a safety lamp, while the men are at work.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

FIGURES concerning the volume of employment in January, 1922, from representative establishments in 13 manufacturing industries and in bituminous coal mining compared with those of identical establishments for January, 1921, show that there were increases in the number of persons employed in 9 industries and decreases in the number of persons employed in 5 industries. The most important increases, 135.5 per cent and 114.9 per cent, appear in the automobile and woolen industries, respectively. Iron and steel shows a decrease of 21.5 per cent and car building and repairing a decrease of 16.1 per cent. The figures were tabulated by the Bureau of Labor Statistics of the U. S. Department of Labor.

When compared with January, 1921, the amount of the payrolls in January, 1922, show increases in 9 industries and decreases in 5 industries. Woolen shows an increase of 106.8 per cent and hosiery and underwear an increase of 91.6 per cent. Respective percentage decreases of 55.1, 37.5 and 30.5 appear in iron and steel, car building and repairing, and bituminous coal mining.

Comparative data for January, 1922, and December, 1921, show that in 4 industries there were increases in the number of persons on the payroll in January as compared with December, and that in 10 there were decreases. The largest increases are 2.5 per cent in boots and shoes, and 1.7 per cent in leather manufacturing. Cigar making shows a decrease of 13.6 per cent and iron and steel a decrease of 6.9 per cent.

When comparing January, 1922, with December, 1921, 2 industries show an increase in the amount of money paid to employees and 12 show a decrease. The two increases are 1.1 per cent in boots and shoes and 0.8 per cent in leather making. Percentage decreases of 35.8, 18.1 and 16.9 appear in automobiles, car building and repairing, and iron and steel, respectively.

During the period Dec. 15, 1921, to Jan. 15, 1922, there were wage changes made by some of the establishments in 10 of the 14 industries.

Woolen Mills Work Part Time

Part-time employment was reported for a number of mills in the woolen industry, causing the per capita earnings to be lessened 7.9 per cent in January.

Hosiery-Underwear Business Sags

On account of lack of business, less time was worked in the hosiery and underwear industry and the per capita earnings showed a decrease of 8.5 per cent when January figures were compared with December figures. Five establishments reported a decrease in wages of 12½ per cent, affecting all employees in the first establishment, 81 per cent in the second, 68 per cent in the third, and 62 per cent in the fourth. The number of employees affected in the fifth establishment was not stated.

Automobile Workers Earn Less

Some establishments in the automobile industry were partly closed during the month of January owing to lack of orders. A wage decrease of 15 per cent to all men was reported by one establishment. Two plants reported a decrease of 10 per cent, affecting the entire force in one, and 60 per cent of the force in the second. Sixty per cent of the men in one plant were cut 8 per cent in wages. When per capita earnings for January and December were compared a decrease of 31.7 per cent was shown.

Iron and Steel Output Lower

Part-time operation of iron and steel mills and reduction of forces resulted in decreased production. An increase in pay of 1½ per cent was granted to 64 per cent of the men in one plant. A reduction of 19 per cent was made to 4 per cent of the force in one mill, while another mill reduced the wages of 45 per cent of the employees 15 per cent. Twelve plants reported a decrease of 10 per cent, affecting all employees. In two mills a 2½ per cent cut in wages was made to 40 per cent and 10 per cent of the employees respectively. Four plants reported a decrease of 2 per cent, affecting 65 per cent of the men in the first plant, 60 per cent of the men in the second, 50 per cent of the men in the third, and 40 per cent of the men in the fourth. The per capita earnings for January were 10.8 per cent less than those for December.

Cut Wages of Silk Mill Operatives

Many silk mills were not operating to full capacity and the per capita earnings for January, when compared with those for December, show a decrease of 5.5 per cent. A decrease in wages of 12½ per cent was reported by 2 mills, affecting 95 per cent of the employees in one mill and 91 per cent in the second mill. Six mills reported a wage cut of 7½ per cent, affecting 95 per cent of the employees in 5 mills and 80 per cent of the employees in the sixth mill. A 10 per cent reduction was reported by one firm, but the percentage of employees affected was not stated, while 2 other firms made a decrease to 95 per cent of the employees.

Paper Makers' Earnings Decrease

A decrease of 1.2 per cent was reported for January per capita earnings in the paper-making industry as compared with those for December. A wage decrease of 18 per cent to 54 per cent of the force was reported by one plant, the wages of 58 per cent of the force in another concern were cut 17 per cent, and a wage rate decrease of 10 per cent, which affected 89 per cent of the employees, was reported by still another concern. Wage reductions ranging from 5 to 10 per cent were made to 68 per cent of the men in one mill. Another mill reported a wage rate decrease of approximately 15 per cent, but the number of men affected was not stated.

Car Building and Repairing Lag

Operations were partly discontinued in many car building and repairing plants, as fewer men were employed and less time worked. The per capita earnings for January were 13.4 per cent lower than those for December.

British Coal Exports During 1922 May Rival Those of 1913

Start Made Toward Recovery of Lost Foreign Trade After Most Disastrous Year in the History of Coal Industry

PRINCIPALLY because of the three months' strike the year 1921 was, perhaps, the most disastrous in the entire history of the British coal industry. But in spite of the difficulties of the country, production approached 160,000,000 tons and during the autumn months Great Britain made a start toward recovering lost foreign trade. The English view is that sacrifices have been so heavy in recouping these losses that the United States, which appears to have been ousted from many foreign markets, is not actually defeated and will return to the competing field during 1922. Prices on English coal, which began dropping early in the year, were hurried downward by the strike. Foreign demand absorbed so small a part of the country's production that prices now are down to one-quarter of the 1920 summer level, many collieries are closed and others are working short time.

The salient features of the strike through April, May and June are now pretty well known to the American industry, but various recent articles and utterances all indicate that if both sides had made their positions clear to each other and to the public, the settlement ultimately arrived at might have been made without closing at all.

The stoppage naturally aggravated the other troubles of the industry, chief of which was the almost total loss of the export trade, and home buyers learned new methods of coal economy. They consumed but 114,000,000 tons during the first eleven months of the year, including 3,000,000 tons imported. In 1913 home consumption totaled 189,000,000 tons.

When mining work was resumed, many of the foreign markets had disappeared entirely and factories could not restart owing to the high price of fuel. The industry was confronted with the problem of lowering prices to a marketable level without incurring bankruptcy. Since the beginning of the year the average pithead price has been reduced by nearly 15s. per ton and is still falling. Coal has been sold below cost to hold overseas trade.

General Coal Position Far Behind That of 1913

The general position of the coal industry is far behind that of 1913. In that year production was 287,412,000 tons. In 1921 a fair estimate preliminary to final compilations is 160,000,000 tons. During the first eleven months of 1913 the quantity of small coal exported was 15,978,810 tons, while during the corresponding period of 1921 it amounted to only 5,596,520 tons, or 35 per cent of the 1913 figure. The trade in "through" unscreened coal, which in 1913 amounted to 13,492,811 tons, decreased in a similar period of 1921 to 4,714,893 tons, or 35.5 per cent of the 1913 figure. The export trade in large coal in 1913 was 37,699,044 tons; in 1921 it was 10,039,979, or 26.5 per cent of the 1913 tonnage. Coal shipped for the uses of steamers engaged in foreign trade amounted in 1913 to 19,182,362 tons; in 1921 it had declined to 9,646,136, or 50.2 per cent.

There are indications that Great Britain is slowly but surely re-establishing itself in overseas markets. Spanish railways are insisting upon British coal in preference to Spanish because of its quality. Reports from Cape Town state that there is a steady falling off in the demand for bunker and export coal there.

In South America Britain is showing a decided growth against the United States. In 1913 the United Kingdom exported 6,900,000 tons to Chile, Brazil, Uruguay and Argentina, while the United States sent them but 367,000 tons. By 1920 the balance naturally was upset. The United States' exports to those countries totaled 3,444,000 tons and the United Kingdom's only 557,000 tons. But during the first months of 1921 the United Kingdom had sent 331,000 as against 1,000,000 tons from the United States.

Coal freight rates on cargoes from England to the River Plate have recently increased 19s. per ton. Reckoning the price of cargo coal to South America at 26s. the total cost would be 45s. American coal at $5 with freight at $4 costs a little over 46s. in South America. Thus the United Kingdom still has a slight advantage.

An estimate made in a Cardiff publication and reprinted in Commerce Reports, issued by the U. S. Department of Commerce, is that since British production should be high in 1922, and since home consumption may not exceed 125,000,000 tons, 1922 exports should equal those of 1913.

The extent to which the war and the campaign for the nationalization of the coal industry have handicapped development work in the mining districts is as yet little realized. Six important schemes for the sinking of pits in North Nottinghamshire were held up by the outbreak of war, four of which have not resumed. The two other enterprises which were launched at about this time have been resumed. Eighteen bores have been sunk in the northern part of the country at an estimated cost of £170,000. Eight could today be classified as successful, six doubtful, and the remaining four failures.

As far as outputs and costs are concerned it is the general opinion in Great Britain that output, which is now steadily climbing, will attain the pre-war rate within a few months, and that production costs and selling prices will fall gradually in 1922, though not to pre-war levels.

Severe industrial depression in Great Britain continues, but there are healthy signs of improvement, and this improvement will be assisted by government plans, but chiefly by the cheapness of industrial coal.

The executive committee of the Miner's Federation is to approach the owners through the National Board with the view of both parties making a joint representation to the Board of Trade in order to obtain an investigation into the causes, both political and economic, of the present situation in the industry with the object of getting some relief for the industry which would benefit those engaged in it, at the same time bringing additional advantages to the community. The miners have issued a table showing the parlous position of the workers in some districts. The owners have replied to this statement indicating that the figures given are misleading because:

1. In the statement no allowance is made for the coal supplied cheaply or free of cost to employees who are householders. This allowance is approximately equivalent to 1s. per day, or 6s. per week, and the supply of coal to these employees involves a loss to the colliery companies of about 15s. per ton, or £4,000,000 per annum.

2. The miners do not show the actual wages received by the men, but the minimum rates to which they are entitled. No allowance for bonuses is made.

3. The fact is not taken into consideration that the men are now paid the same rates for a seven-hour day as they were for the eight-hour day, and that pieceworkers were compensated for the shorter day by an increase of 14.2 per cent on piece rates.

The owners say that if present prices do not yield profitable results it is because of the high cost of production, which is, so far as it concerns labor, due to the reduction in working hours and diminished production. The present and pre-war positions in regard to output are shown in the appended table:

	1913			4 Weeks November, 1921		
District	Output Tons	Men Employed	Output per Man Tons	Output Tons	Men Employed	Output per Man Tons
South Wales...	4,546,000	233,000	20	3,600,000	214,000	17
Lanos, Cheshire and North Wales.....	2,250,000	126,000	18	1,509,000	121,000	12
Northumberland.....	1,185,000	61,000	19	806,000	52,000	16
Durham.....	3,322,000	166,000	20	2,276,000	145,000	16
Yorkshire.....	3,493,000	170,000	21	3,081,000	166,000	18
Derby, Notts and Leicester	2,696,000	111,000	24	2,104,000	122,000	17
Scotland.....	3,396,000	147,000	23	2,406,000	125,000	19

Though wages are low today relative to purchasing power, they are in amount considerably higher than in 1914, and yet, as will be seen in the above table, the value of the labor as measured in output is appreciably less.

Says Economic, Not Political, Means Will Stabilize Coal Industry

"THE article in *Coal Age* of Dec. 1 on 'Consumer Storage as a Means of Regularizing the Coal Industry' states some obvious truths," says Warren S. Blauvelt in a letter of recent date. He adds: "There is just one way of accomplishing the purpose, viz., make it more profitable for all concerned for consumers to store coal during the dull season, when transportation facilities are ample, keeping mines and railroad equipment steadily engaged, than to follow the practices which have prevailed in the past. Economic means will be effective, but political means will inevitably fail.

"You may possibly recall that in 1917, when coke prices were fixed, there was a differential of $1 a ton between the prices of foundry and furnace coke. At that time there were some seven or eight thousand industries engaged in essential work which required relatively small tonnages of coke, the total being only about 10 per cent of the country's output. On the other hand, there were some 350 blast-furnace plants which required 85 per cent of the country's production. Owing to lack of transportation facilities there was a shortage of coke from October, 1917, to May, 1918. As on the average it probably did not cost more than 60c. per ton to manufacture and load foundry coke than furnace coke it is obvious that the profit on foundry coke was greater. The effect was to relieve the Fuel Administration from the serious if not well-nigh impossible task of policing the movement for small shipments of coke to a vast number of essential industries, so that all energies could be concentrated upon the task of increasing production of furnace coke and supervising its distribution so that unnecessary stocks would not be accumulated at some furnaces and other furnaces be compelled to bank in consequence. The economic method worked very satisfactorily and undoubtedly cost less directly and indirectly and succeeded better than would any effort to accomplish the same purpose by exercising the police powers of the government.

"Of course the ordinary politician prefers to use political power rather than the forces of economic law. The latter is impersonal, adds nothing to his prestige and, if adopted, its very success tends to show what a blind leader the average politician has been.

"With these facts in mind I have attempted to formulate some rules which if adopted would utilize natural economic law to stabilize the production and distribution of coal and coke, and thus eliminate some of the wastes which are directly traceable to economic causes. I enclose for your criticism the results of my study of the subject."

Mr. Blauvelt suggests the following rules regarding car supply and freight rates intended to reduce wastes caused by irregular production, transportation and distribution of fuel:

"*Rule I*: *Car Distribution.*—For the equitable distribution of cars at coal mines and coke plants, and to stabilize their operation, every such operation shall have two car ratings. The ordinary car rating shall be determined by the daily production capacity of each operation. The primary car rating of each operation at any period shall be the average number of cars shipped by such operation during the preceding period, April 1 to July 31, inclusive. In case of car shortage, the distribution of cars shall first be made pro rata on the primary ratings; if additional empty cars are available they shall be distributed pro rata on the ordinary car ratings.

"*Rule II*: *Freight Rates.*—On or before April 30 of each year every railroad carrying coal or coke shall refund to each consignor by whom coal or coke was shipped during the preceding twelve months ending March 31, an amount which shall be calculated as follows:

"(1) Select the 30 consecutive day period of full car supply during the preceding year in which the minimum tonnage was shipped by each consignor from each operation to each destination zone via each routing.

"(2) Ten per centum of the freight charges on the portion of coal or coke shipped each month by each consignor from each operation to each destination zone, via any route, equal to the minimum monthly tonnage determined in (1) shall be the amount refunded to each consignor, provided that coal or coke was shipped by such consignor from such operation to such destination zone via the same route monthly for at least five consecutive months during the twelve months ending March 31.

"The purposes of these suggested rules are:

"1. To reduce the wastes of capital borne directly by operators and carriers and by them passed on to the consuming public, in providing and maintaining plant and equipment at least 30 per cent in excess of that required if such facilities were utilized at a reasonably uniform rate.

"2. To reduce the wastes of labor resulting from the irregular operation of mines, coke plants and transportation facilities.

"3. To reduce the prices of fuel to consumers by reducing wastes of labor and capital.

"4. To promote better industrial relations by stabilizing employment.

"These rules would employ the economic means to accomplish these purposes. They would increase the reward and reduce the risk involved in efforts to stabilize the production and distribution of fuel. They also would increase the risk and reduce the probability of obtaining profits by adopting practices which tend to cause violent price fluctuations, local fuel shortages, labor disturbances and constant appeals for political action which cannot solve an economic problem."

Operators' Association Urges Action to Reduce Prices of Mining Equipment

PRICES of mining equipment, machines, repairs, etc., including powder, have not been deflated to the extent that they should be, in the opinion of the executive committee of the Southern Appalachian Coal Operators Association. Believing that the coal industry had fully liquidated, as had most of the basic commodities, and that such lines as mine equipment, machines, supplies, etc., also should readjust prices, the following letter, signed by J. E. McCoy, secretary of the association, was addressed to manufacturers in those lines under date of Feb. 15:

"The attention of the executive committee of this association, in annual meeting Friday, Feb. 10, was called to the high price at which mining equipment, machines, repairs, etc., including powder, were now being sold.

"It was the consensus of opinion that the prices of such supplies had not been reduced or liquidated to the extent they should be. I was directed to call the matter to your attention and to state that it was felt the coal industry had fully liquidated, as had many of the other lines, including most of the basic commodities, and it was respectfully suggested that liquidation in lines represented by mine equipment, machines, supplies, etc., should be similarly adjusted.

"Our committee felt that you would appreciate having the matter brought to your attention for consideration and that you would be glad to do whatever, in your judgment, you thought to be the proper thing under all circumstances. It was felt very strongly that the price of machinery, equipment and supplies should be deflated in line with the deflation in coal and other commodities.

"Your acknowledgment and expression upon the subject will be appreciated."

For the purpose of obtaining the co-operation of the entire coal industry, if possible, in effecting the proposed deflation, Mr. McCoy has urged the secretaries of the various operators' associations to take similar action.

ANTHRACITE PRICE DIAGRAM NOT PARKER'S.—In *Coal Age* of Jan. 19, 1922, page 93, was published a diagram showing the course of spot prices of stove and buckwheat sizes of anthracite for the years 1913 to 1921. This diagram was drawn from the records of *Coal Age* and was published on the same page with an article on anthracite by E. W. Parker, director of the Anthracite Bureau of Information, without his knowledge. Mr. Parker had nothing to do with either the collection of the prices or their publication in this form.

Congress and Administration Favor "Hands-Off" Policy Toward Threatened Coal Strike

By Paul Wooton
Washington Correspondent of *Coal Age*

SENTIMENT in Congress and in the administration is strongly in favor of a "hands-off" policy in the matter of the threatened coal strike. The administration disclosed at the time of the threatened railroad strike that it is its policy to go to unusual ends to protect the public from the consequences of any strike. If the strike should assume such proportions as to constitute a serious public menace, there is no question that prompt action would follow. Feeling in the administration at present apparently is that the public has been forewarned and should be prepared to weather this disturbance. In the executive as well as the legislative branch of the government it seems to be the opinion that the most satisfactory settlement of the questions at issue can be effected best by those directly interested working in their own way. There is a general opinion that it will be better for all concerned if the matter is fought out at this time.

There can be no certainty, however, that Congress and the administration will keep hands off. Each of these agencies is sensitive to public pressure. If some development in the situation should result in a demand from the public for some form of government interference, there never is assurance that political expediency will not prompt action. This applies more particularly to Congress, and there is a safeguard there in that the legislative machinery works slowly and time is the best antidote for half-baked legislation.

No Significance Attached to Labor Department Move

No significance is attached to the announcement that the Secretary of Labor will attempt to get representatives of the miners and the operators together in a conference. This is the perfunctory step taken by the department to conciliate any labor dispute and is not regarded as any manifestation of administration policy.

Washington is divided into two groups of thought as to the strike possibilities. The line of cleavage is distinct. One group, which includes those who reflect the views of the operators, is positive that the country will not miss the coal production which the strike will stop. The other group, with which Secretary of Commerce Hoover may be numbered, foresees several months of disturbance. It is generally believed that the strike will be exceedingly stubborn in certain fields and in the anthracite region. It is fully expected, however, that there will be considerable coal coming out of some of the union districts before the strike has progressed far.

The car service section of the American Railway Association has been forehanded and is doing all within its rather limited authority to meet the serious problem certain to arise in the distribution of enough coal to keep the country going when it comes from a limited area and moves to unusual markets. It has been suggested that the Central Coal Committee be rehabilitated to handle the distribution, but it is recognized that the Interstate Commerce Commission will be slow in delegating any authority which will allow priorities in the movement of coal to certain places.

Anticipating the increase in coal production, the car service section began several weeks ago to urge the railroads to repair their coal cars. It was suggested that the bad-order cars which could be repaired at least cost and made available more quickly should be repaired first. As a result there has been a remarkable decrease in recent weeks in the number of bad-order coal cars. When production begins to approximate 10,000,000 tons, car shortages usually begin to develop. A telegraphic survey of the situation that has just been made, however, reveals that no serious car shortages are in immediate prospect. During the period of car abundance retailers in many instances have been taking their time to unload cars. Now it is being found difficult to secure prompt unloading. Nearly all railroads have sent bad-order coal cars to outside shops and have increased their own repair forces, with the result that each day is seeing a material increase in coal-car supply. The railroads serving non-union territory have been particularly active in ordering coal-car repairs and at this time have a particularly low percentage of bad-order coal cars.

Reports reaching Washington from certain of the union districts indicate that sentiment among the men is ripe for a defection from the union. The attitude of the public utilities and of manufacturers apparently is that the war-time rate of pay in coal mines must be deflated, so that the operators will have the moral support of those two groups. In addition, the indications are that there is little public sympathy for the attitude of the United Mine Workers.

Those who have been placing reliance on obtaining English coal in the event of a strike may be disappointed, as reports to the Department of Commerce indicate that the labor situation at the Welsh mines is critical, with prospects greatly favoring interruption in production. British exporters are known to be inquiring about purchases of American coal to take care of some of their South American commitments.

If the strike in the anthracite district should last as much as four months—and it is admitted that the chance is great for a stubborn struggle in that district—it would mean a great shortage of hard coal next winter. It would be absolutely impossible to bring production to normal regardless of the effort that might be put forth after the termination of the strike. If the strike can be settled within six weeks, it is believed that there will be no appreciable effect so far as consumers are concerned, but any cessation of production for a longer period will mean losses which cannot be made up. It is a matter of historical interest to note that the anthracite strike in 1902 lasted sixteen weeks; that of 1906, six weeks, and that of 1912, seven weeks.

Purchasing Agents Discuss Coal

COAL was the subject of discussion when the Purchasing Agents' Association of New York met at the Builders' Exchange Club on Tuesday evening, Feb. 21. President M. G. L. Harris presided, and after dinner and routine business he introduced O. P. Hood, of the U. S. Bureau of Mines, who gave an interesting talk on the purchase of coal by analysis. Mr. Hood stated that only the anaylses to be obtained through systematic sampling of delivered output in large quantities could be of value in determining the average quality of any coal.

Dr. Henry M. Payne then spoke on the efficient use of coal in average boiler plants, and recounted a number of experiences in power plants where a better working knowledge of conditions on the part of the purchasing agent would have averted much fuel trouble.

At the request of the executive committee of the association, Dr. Payne then detailed the work of the Anthracite Coal Consumers' Association, and by a series of graphs illustrated the railroad freight situation on anthracite. The graphs were distributed to the members present. Much interest was exhibited in the statement by Dr. Payne that while the Hampton Roads rate on bituminous coal, with an average haul of 403 miles, is $2.80 per ton, the rate on anthracite to New York, with an average haul of 155 miles, is $2.61 per ton.

J. G. Bradley, president of the National Coal Association, spent a day in Washington last week conferring with J. D. A. Morrow and the association's Washington officers.

I. C. C. to Investigate Bunker Coal Rates

ON its own motion the Interstate Commerce Commission has instituted an investigation into and concerning the propriety of rates on bunker coal from all points of origin to all ports of the United States, which are lower than rates from the same points of origin to the same ports on similar kinds of coal for local delivery there, not into vessels.

This investigation has been instituted because many of the carriers serving Atlantic ports make lower rates on coal to such ports for use in bunkering vessels than they make on coal to the same ports for local use, whereas carriers serving certain Gulf ports have not felt free to adopt this practice in view of decisions of the commission indicating that it is unlawful. The investigation will deal primarily with the lawfulness and propriety of the practice of discriminating in rates between coal delivered into vessels for bunker purposes and coal delivered at the port, not into vessels, for local use.

At the hearing, which has been scheduled for March 20, 1922, at Washington, D. C., before Examiner W. P. Bartel, the commission desires to obtain information concerning the following matters among others:

(1) To what ports are lower rates being applied on bunker coal than on coal for local or domestic consumption? Are such rates characterized as "transshipment" rates, "free on board vessel" rates, "bunker coal" rates, or otherwise?

(2) The methods of handling bunker coal at the various ports, i.e., whether unloaded from piers into vessels or lighters, and comparisons of the service with that performed on coal for local consumption.

(3) The approximate volume of bunker coal handled through each port.

(4) Facts tending to show whether or not the practice of according lower rates on bunker coal than on coal for local use results in unjust discrimination or undue prejudice and disadvantage.

There is a differential of 33c. against coal destined inside the Capes at Philadelphia in favor of coal going outside the Capes. In the case of Baltimore the differential is 40c., and at Hampton Roads 24c., while at New York there is no such preferential rate. Originally competition for coastwise New England business was the main reason for making a low outside Capes rate, although the classification, of course, includes "outside" bunkers. New York is not in position to cater extensively to the coastwise trade and no similar differential was applied at this port.

World's 1921 Coal Output, 1,100,000,000 Metric Tons, Fell to 1909 Level

WORLD production of coal in 1921 dropped back to the level of 1909. From reports so far received, the U. S. Geological Survey estimates the total output at approximately 1,100,000,000 metric tons. This figure is subject to material revision as more complete returns are available.

In comparison with the feverish year 1920, the year just closed shows a decrease of more than 200,000,000 tons. The chief factors in the decrease were the British miners' strike which lasted from April to June, and—more important—a worldwide industrial depression. Prices collapsed early in the year, and the sea-borne coal trade of the world fell off sharply. The consequent reduction in the volume of business offered to the shipping of the world has been an important element in the decline in ocean freight rates, so keenly felt by American shipping.

Of the major coal-producing nations, France and Germany were the only ones to show an increase. Progress in restoring the ruined mines of France is indicated by the steady increase in output of the past three years. In 1919 22,000,000 tons were produced; in 1920, 25,000,000; in 1921, approximately 29,000,000. A further increase of about 12,000,000 tons, however, would be necessary to bring French production up to the level of 1913. German production of bituminous coal also is still far below the pre-war level although an increase was effected in 1921 as against 1920. German production of lignite in 1921 reached the highest point ever attained. The estimated output of 120,000,000 tons is an increase of 33,000,000 tons over the last year before the war.

The proportion contributed by the United States was 40.9 per cent, a larger share than in the years before the European war, but the smallest in any year since 1916.

The following table, prepared by W. I. Whiteside of the Section of Foreign Mineral Reserves, presents the information received by the Geological Survey up to Feb. 15, 1922. The tonnage of the countries not yet heard from ordinarily amounts to 12 or 15 per cent of the total. Receipt of data for these missing countries, estimates for which are included in the total, may raise or lower the final figure by some millions of tons. A more complete report will be issued by the Geological Survey about April 1.

PRELIMINARY ESTIMATE OF WORLD'S COAL PRODUCTION IN CALENDAR YEARS 1919, 1920 AND 1921

(In metric tons of 2,204.622 lbs.)

Country	1919	1920	1921
Australia	10,736,321	13,176,426	(a)
Belgium	18,342,950	22,388,770	21,807,160
British India	22,991,217	17,356,889	(a)
Canada	12,411,328	15,088,175	13,300,000
China	23,000,000	19,500,000	(a)
Czechoslovakia	26,946,813	31,086,479	(a)
France	22,341,000	25,300,000	29,000,000
Germany—Coal	(b) 116,500,000	(b) 140,757,433	(b) 145,400,000
Lignite	93,800,000	111,634,000	120,000,000
Japan	31,461,386	29,245,384	(a)
Union of South Africa	9,313,232	11,181,846	(c) 9,400,000
United Kingdom	233,467,478	233,216,071	166,992,000
United States	502,534,410	586,000,000	448,600,000
Other countries	46,553,865	49,068,527	(a)
Totals	1,170,400,000	1,305,000,000	1,100,000,000

(a) Estimate included in total. (b) Includes Saar and Upper Silesia. (c) Estimated from 11 months' production.

Why One Coal Mine Was Idle

AMONG the statements and counter-statements with regard to the coal situation which have been published recently the assertion by miners' representatives that miners utilize their full opportunity to work has been often reiterated. In this connection a situation which developed at one of the mines in the Fifth and Ninth Districts Saturday, Feb. 11, causing the mine to stand idle, is related by W. K. Kavanaugh, president of the Coal Operators Association of the Fifth and Ninth Districts of Illinois.

"The mine employs about 230 men," said Mr. Kavanaugh, "and hoists about 1,200 tons a day, and when loading in railroad cars loads about 24 to 26 cars. The miners at this mine have agreed among themselves that unless seven empties are at the mine in the morning they will not go below for fear of being inconvenienced in starting work and finding themselves unequipped with railroad cars and unable to continue. When the men came to work Saturday, Feb. 11, this mine had no railroad cars in the yard. The company, however, did not want to load railroad cars that day but desired to place the entire day's output on the ground for storage, consequently it was unnecessary that any railroad cars be available. The superintendent guaranteed the men a full day's work if they would go below. The men held a consultation among themselves, however, and decided that the ruling they had made to the effect that the men would not work unless there were at least seven empties in the yard held good and for that reason the men refused to go to work below."

Preston County Operators Reduce Wages

TO put their mines on a basis under which they can compete with those operating in other fields and without waiting for action in any other section of northern West Virginia, Preston County operators with mines near Kingwood, W. Va., have adopted a new wage scale and are now paying their men in accord with it, some of the rates being as follows:

Pick mining, headings, 60 to 65c. per ton; pick mining, rooms, 55c. a ton; drivers and trackmen, $3; motormen, $3.12; blacksmiths, $3.75; trappers, $1.75; engineers, $3.24; firemen, $3.12; trimmers, $2.50; unspecified inside labor, $2.80; unspecified outside labor, $2.50. All the day rates are based on a day of eight hours.

Operators' Attitude Toward Wage Conference Unchanged

Southern Ohio Producers Decline to Attend—Pittsburgh Employers Expected to Take Similar Position—Eastern Ohio, Illinois and Indiana Mine Owners Reluctantly Agree to Interstate Parley

RESPONSE of the operators to John Lewis' second call for a conference at Cleveland on March 2 between the United Mine Workers and representatives of producers in the Central Competitive Field, issued on Feb. 20, two days after the close of the miners' convention at Indianapolis, so far has introduced nothing new into the situation.

Following the policy announced early in January, southern Ohio operators have flatly declined to attend a conference. Pittsburgh is expected to take the same position; eastern Ohio, Illinois and Indiana have indicated a reluctant willingness to meet in an interstate conference if Mr. Lewis can arrange it. In a statement issued last week the Illinois operators disclaim any desire to forego collective negotiations with their men, stating they have never refused such conferences with their own men, but they are opposed to the four-state conference. They indicate that the only purpose of an interstate meeting now would be to discuss with Mr. Lewis the question of an interstate wage settlement, to which the operators are opposed. The statement discloses that there are two prime reasons for this attitude:

"The first is the apparent legal obstacle developed as a result of the Indianapolis indictment. The second is the fixed belief, held quite generally by coal men throughout the country, that mine labor as well as organized labor in other industries are demanding negotiation in unwieldy units. Adequate and proper representation for wage agreement negotiations for such large areas give a conference body of such size and diversified opinion that the original intent and purpose of collective bargaining is made impossible.

"This is not a new idea either with the operators. It is based on ample precedents of which the public have apparently already approved. The United States Steel Corporation, through Judge Gary, refused to negotiate with others than his own employees. The railroads of different sections of the country have sought and clamored for permission to negotiate and adjust wage matters with their own employees or at least in their own localities, which latter they are now doing in regional conferences inaugurated by Secretary Hoover. Nor could there be given any clearer evidence than the recent demonstration of railroad labor of the futility of such massive and countrywide effort on the part of organized labor attempting to force the continuance of an unnatural wage level through sheer strength and an alleged ability to paralyze all industry through the use of so-called 'economic power.'"

In answer to the request of Mr. Lewis for a meeting at Cleveland the Illinois operators wrote him on Feb. 21, stating: "We have well-defined ideas as to what we can and are willing to pay our miners and day laborers, and conditions under which we are willing to make a new agreement, and we are prepared at any time to discuss these questions collectively with all of the other operators and miners of the Central Competitive district, when such a meeting has been agreed upon in accordance with resolution passed in New York City, March 31, 1920, and to which you refer in Dec. 16, 1921, letter."

The position of the Indiana operators has not been so clearly stated, but it is understood to be that the Cleveland meeting requested by Mr. Lewis would be useless because some of the fields have refused to take part. The Indiana operators met in executive session at Terre Haute on Feb. 22, but made no announcements of policy.

After a meeting on Feb. 23 Michael Gallagher, president of the Pittsburgh Vein Operators' Association of Ohio, telegraphed John Lewis that the position of the operators in that field was unchanged from that in early January, adding "but if President Lewis is able to obtain a meeting at which the operators of the four states comprising the Central Competitive Field will all be represented, this association will send representatives to such a meeting."

There is no equivocation in the reply of the operators of the southern Ohio field. W. D. McKinney telegraphed Lewis that "conditions in this district can only be remedied by a meeting of the representatives of operators and miners of southern Ohio who are affected by the prevailing conditions. Operators of southern Ohio are therefore willing to meet with representatives of southern Ohio miners and agree on a scale to meet that situation."

Charging "Hold Up" by Coal Men, Opposes Funds for Fuel Investigations

COAL prices were discussed before the House Appropriations Committee when Director Bain of the Bureau of Mines appeared in support of funds for coal investigations next year, Representative Cramton, of Michigan, in charge of the bill, taking the position that as the coal industry had "held up" the country, Congress should not spend time or money in investigations in its behalf. Director Bain defended the coal investigations as necessary to build up the coal export trade and stabilize the industry.

The Director referred to the work at the Pittsburgh station in sampling and analyzing fuels for government agencies. He said that in addition to studies of fuels, investigations were made as to conditions under which they were burned. Loss in fuel burning was due to poor combustion, which was shown by production of smoke. Work had been carried on in lessening the smoke nuisance.

"There is need to investigate more fully the methods of storing, handling and transporting coal to build up our foreign markets and to ship a better quality of coal to the consumer," said Director Bain, in asking for $5,000 for a chemical fuel expert who would conduct this work in co-operation with the Bureau of Foreign and Domestic Commerce. Dr. Bain pointed out that American coal exporters must face foreign competition and also combat the charge that American coal is inferior to the product of British mines. He said that foreign competition had extended to the point where low-grade coal was bought in Constantinople and mixed with American coal and sold as American coal, to the detriment of the American industry.

Director Bain stated that the country required the export trade and if we could export our surplus coal it would stabilize the coal industry and help business in general as the present instability of the coal industry hurt all business.

He also said that the coal mining industry was seasonal, the men not working regularly, but that if the government could find a way to develop the export coal trade it would act as a real stabilizer to keep the mines operating in periods of slack domestic demand.

Representative Cramton replied that as the coal people were "holding up" the public he did not see why Congress should consume time or spend money in helping them, and added that increased foreign trade would make conditions worse for the domestic coal consumer, as the foreign trade would be used as a "club" on the domestic trade.

Director Bain pointed out that the drop in coal exports had affected West Virginia and also caused the price of coal to drop, adding that West Virginia coal could be purchased now cheaper than last year. "There are many mines shut down, capital idle and men idle," said the Mines Director, "which is a cost which has to be met some time and somehow. The people who buy coal will ultimately have to pay the cost. The depression in the industry is not good for the men or the country as a whole."

Peabody and Other Midwestern Companies to Withdraw From National Coal Association

THE Peabody Coal Co., of Chicago, and a number of other coal interests of the Middle West will withdraw from the National Coal Association on April 1 or sooner. The cause is variously assigned but in general the affected operators are dissatisfied with the service they are able to get from the association. The Wilcoxson Coal & Coke Co., the Peerless Coal Co. and the Consolidated Coal Co., of St. Louis, also are among those which are about to withdraw.

The Peabody company, which is also withdrawing all of its subsidiaries from the National, will, if its counsel, Silas Strawn, advises, give up memberships in all other coal trade associations, remaining only in those associations whose primary purpose is to handle labor problems.

"The only reason for our action," explained Vice-President George Reed of the Peabody company, "is that we believe the National cannot be of any further service to us. That's all there is to it. There is no ulterior motive. There was a time during the war and immediately thereafter when the National could and did make itself of value to us by interpreting the income tax laws and by representing us at Washington when all sorts of coal legislation was before Congress. But that time has passed."

The only comment F. S. Peabody added was that "the younger men" in his organization had advised the action and that about $27,000 in membership dues would be saved.

Peabody subsidiaries include the following: Superior Smokeless Coal & Mining Co., Big Muddy Fuel Co., Southern Counties Coal Co., By-Products Coke Corporation, Manufacturers' Coal & Coke Co., Black Mountain Corporation, Springfield District Coal Mining Co., Sheridan Wyoming Coal Co., and Federal Coal Co.

Kanawha Operators Issue Ultimatum

KANAWHA operators served notice Feb. 24 on District 17, United Mine Workers, that if the union puts off meeting the operators after March 11 a new wage scale will be posted and that the operators will not consider the check-off. The producers passed resolutions declaring against the check-off and favoring the open shop. So far the miners have refused a conference, waiting for Central Competitive settlement and a new scale, despite efforts of Kanawha operators to arrange a conference.

Philadelphia Coal Club Has Annual Dinner

THE annual dinner of the Philadelphia Coal Club was held at the Hotel Bellevue-Stratford, Philadelphia, Feb. 27, about 400 members and guests being present. Noah H. Swayne, 2d, was toastmaster. Owen J. Roberts, of the Philadelphia Bar, addressed the members, urging the necessity of "Less Government Regulation in Business." Carter Helm Jones, D.D., spoke on "Civic Pride" and Francis H. Sisson, New York banker, outlined economic principles to offset the financial reverses following the World War.

Officers for the following year are: Noah H. Swayne, 2d, president; Pratt Thompson, vice-president; Charles K. Seull, secretary-treasurer. Directors: Walter D. Bush, Jr.; Samuel B. Crowell, Walter C. Hancock, John E. Lloyd, James M. Kelley, Frank F. Mathers, Reuben B. Platt, George P. Quigley, William L. Scott, Edward R. Simpson, William J. Steen, Henry E. Strathmann, Jr.; C. H. Peacock, Arthur Kuppinger and H. K. Cortright.

Bids for New York City Department Coal Exhibit Striking Variations

BIDS RECEIVED by the Board of Purchase of the City of New York on Feb. 16 for furnishing and delivering to three city departments various tonnages of semi-bituminous and No. 1 and No. 3 buckwheat coals showed a variety of prices. For delivering to the Department of Plant and Structures alongside the municipal ferry, at St. George, Staten Island, 13,000 net tons of No. 1 buckwheat there were eight bidders, as follows:

Majestic Coal Co., $5.97; Weston Dodson & Co., $6.53; Burns Bros., $5.69; V. H. Youngman & Co., $6.62; Commonwealth Fuel Co., $5.53; Intercity Fuel Co., $5.62; Penn Fuel Co., $6.57; H. B. W. Haff (informal), $7.05; A. A. Smith & Co., Bayonne, N. J., $6.98.

For the Department of Water Supply, Gas and Electricity the following bids were received:

Jerome Avenue Pumping Station, the Bronx—500 net tons No. 3 buckwheat: Whitney & Kemmerer, $5.48; V. H. Youngman & Co., $5.98; Burns Bros., $7.32. Five hundred net tons semi-bituminous: Whitney & Kemmerer, $6.54; Youngman & Co., $7.18; Burns Bros., $5.99.

Ridgewood Pumping Station, Brooklyn—4,500 net tons semi-bituminous run-of-mine: G. D. Harris & Co., $5.84; Whitney & Kemmerer, $5.97; Commonwealth Fuel Co., $6.19; Gavin Rowe, $6.17; Burns Bros., $6.13; Weston Dodson & Co., $6.07; F. M. A. Leach, $6.18; B. Nicoll & Co., $6.07; Majestic Coal Co., $6.37.

Milburn Pumping Station, Baldwin, L. I.—1,500 net tons semi-bituminous run-of-mine: G. D. Harris & Co., $6.60; Gavin Rowe, $7.66; Commonwealth Fuel Co., $6.83; B. Nicoll & Co., $6.731; Majestic Coal Co., $6.24.

Massapequa Pumping Station, Massapequa, L. I.—600 net tons semi-bituminous run-of-mine: G. D. Harris & Co., $6.76; Commonwealth Fuel Co., $6.47; Gavin Rowe, $6.86; Weston Dodson & Co., $6.45; F. M. A. Leach, $6.79; B. Nicoll & Co., $6.463; Majestic Coal Co., $5.98.

Department of Correction, New York City Reformatory, Hampton Farms, Orange Co., N. Y., delivered f.o.b. siding New Hampton, 200 net tons semi-bituminous run-of-mine: G. D. Harris & Co., $6.56; Whitney & Kemmerer, $6.69; Commonwealth Fuel Co., $6.39; Burns Bros., $7.72; Weston Dodson & Co., $6.20; F. M. A. Leach, $6.39; B. Nicoll & Co., $5.67; Majestic Coal Co., $6.46. Six hundred net tons No. 3 buckwheat: Commonwealth Fuel Co., $3.88; Burns Bros., $4.59; Weston Dodson & Co., $4.92.

654 Companies Obtain Average Margin of 10c. Per Ton on Bituminous Coal

TONNAGE produced, average costs and prices received for bituminous coal, f.o.b. mines, mine-run basis, by 654 operating companies reporting to the National Coal Association, by months in 1921, according to data introduced by the National Coal Association in hearings before the Interstate Commerce Commission, Feb 28, 1922, were as follows:

Month	Production (Net Tons)	—Total Received— Dollars	Average Per Ton	—Total Cost— Dollars	Average Per Ton	Margin Per Ton (a)
January.....	13,760,621	$50,098,578	$3.64	$42,529,059	$3.09	$0.55
February.....	10,580,327	36,893,419	3.49	34,483,970	3.26	.23
March.....	10,505,457	35,899,329	3.42	33,971,972	3.23	.19
Total, 3 mos.	34,846,405	122,891,326	3.53	110,985,001	3.18	.35
April.....	9,238,059	29,457,386	3.19	30,114,706	3.26	—.07
May.....	11,978,174	36,613,419	3.06	34,849,555	2.91	.15
June.....	11,754,664	34,853,274	2.96	34,200,553	2.91	.05
July.....	9,946,896	29,001,018	2.92	29,877,165	3.00	—.08
August.....	11,384,236	32,773,861	2.88	31,825,867	2.80	.08
September.....	11,474,324	31,999,430	2.79	31,499,292	2.74	.05
October.....	14,175,260	38,734,260	2.73	36,123,188	2.55	.18
Total, 7 mos.	79,951,613	233,432,648	2.92	228,490,326	2.86	.06
Total, 10 mos	114,798,018	356,323,974	3.10	339,475,327	2.96	.14
November (b)..	10,669,823	28,499,819	2.67	29,026,626	2.72	—.05
December (c)..	7,941,392	20,357,556	2.56	23,058,735	2.90	—.34
Total for yr..	133,409,233	405,181,349	3.04	391,560,688	2.94	.10

(a) Margin is not the same as profit. From the margin must be paid all federal income and excess profits taxes and interest on bonds and borrowed money.
(b) Six hundred and thirteen companies only.
(c) Five hundred and eleven companies only.

Appeal in Pennsylvania Tonnage Tax Case

APPEAL to the Supreme Court of Pennsylvania was taken Monday, Feb. 20, from the decision of the Dauphlin County Court of that state, which upheld the constitutionality of the Williams anthracite tonnage tax. It is hoped to have the appeal advanced on the Supreme Court list so that it may be argued before the May session.

Miners' Policy Committee May Avert Threatened Strike

Powers Given to Meet "Unforeseen Circumstances" May Play Important Part in Settlement—Alliance with Railroad Men Carries Only "Moral Support"—Lewis Says Strike Vote Is Purely Formal

BY E. W. DAVIDSON

ON THE face of things the developments of the past week point inevitably to a general mine strike April 1 unless the new move by the U. S. Department of Labor succeeds in staving off a tie-up. A sort of miner-railroader alliance was made at Chicago. The post-convention efforts of John L. Lewis, president of the United Mine Workers, to arrange a wage conference with the operators of the Central Competitive Field having failed of widespread acceptance, the union locals of the land are voting power to their International officers to call a strike if no wage agreement is made by midnight of the last day of March. But the country must not lose sight of the policy committee of the miners, created at the Indianapolis convention. It puts the "but" in every consideration of the situation.

This "but board" is endowed with a good deal of power to meet "unforeseen circumstances" between now and midnight of March 31. There are all sorts of "unforeseen circumstances" possible, despite the fact that President Lewis left Chicago Friday morning saying the miners had already done all that they could toward trying to get a wage conference and that the next move would have to come from the operators.

During the week, however, the last of the Central Competitive operators' associations apparently had already made their "next move," Illinois alone having voted to meet the miners, Indiana and eastern Ohio agreeing to attend a conference if all other associations in the Central Field would, while Pennsylvania and Southern Ohio definitely refused to attend. Thus a deadlock appeared to have been reached.

RAILROAD BROTHERHOODS LEND MORAL SUPPORT

Just how much effect the alliance between the United Mine Workers and the railroad brotherhoods will have remains to be seen. "We do not ask the railroaders to go on a sympathetic strike to help us," said President Lewis when the conference was going on in Chicago Wednesday, "but we do ask their moral support." That is about what was obtained.

After the conference this statement was issued:

"The associated organizations represented in the transportation and mining industries of the country have been compelled to bear the brunt of unwarranted attacks upon their integrity and unjust and inequitable changes in their wage schedules and conditions of employment. The industrial and financial interests responsible for this condition are not yet satisfied and are conducting gigantic propaganda looking toward further wage reductions and additional changes in working conditions that will be detrimental to the people employed in these industries. It, therefore, becomes necessary for the representatives of the associated organizations to assemble and take cognizance of this situation. Impelled by the necessity of effecting a co-ordination of our strength we declare for closer co-operation of our forces, which will operate to more effectively protect the interests of those engaged in these essential and basic industries. After mature deliberation, and with a full sense of our responsibility, we declare that the mutuality of interests of the employees in these basic industries must be recognized and we assert our purpose to apply every honorable method to secure adequate compensation for service rendered and to maintain proper American standards of living.

"When it becomes apparent that any one or group of the associated organizations, is made the victim of an unwarranted attacks, or its integrity is jeopardized, it will become the duty of the representatives of each of the associated organizations to assemble to consider the situation. Ways and means may then be considered and applied to best meet the emergency. Action taken under this section is subject to approval by each organization represented.

"To facilitate the conduct of the business of the associated organizations an executive committee is hereby created composed of the chief executives of the associated organizations, or their specifically designated representatives. It shall be the duty of the executive committee from time to time to make such recommendations to the associated organizations as may in its judgment be deemed wise and to assemble the full conference of associated organizations when conditions make such action necessary.

"This plan shall become operative when ratified by the constitutional authorities of each associated organization."

Secretary Hoover, of the Department of Commerce, who was in Chicago on another mission while the conference was going on, declined to make any statement on the possibility of government intervention in the coal situation.

The strike vote now being taken among the miners, President Lewis explained, is purely formal and merely carries out the will of the convention. He sent out the vote order after it became apparent that his latest effort to get the operators into four-state conference had failed. The referendum vote must be reported to headquarters between March 10 and 15. The men are not voting positively to strike, but only to authorize the International officials to order a strike if the new wage agreement is not made when the deadline is reached. This maneuver is to relieve the officials of the charge, frequently made in the past, of plunging the union into difficulties without giving the "rank and file" a voice.

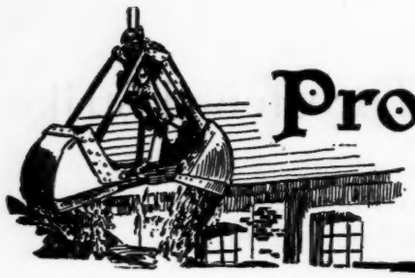
Anthracite Operators Consent to Wage Conference in New York

Warriner Says Further Action Is Contingent on March 15 Meeting—Still Contends There Must Be Deflation in Wages

AT THE conclusion of a two-day conference of the policy committee of the Anthracite Operators Association, in Atlantic City, announcement was made Saturday, Feb. 25, that a conference would be held with the miners in New York City on March 15. The conference was urged in a letter received in the morning of that date from John L. Lewis, president of the United Mine Workers of America. S. D. Warriner, of Philadelphia, president of the Lehigh Coal & Navigation Co., who is chairman of the policy committee, said that future action would be contingent on the developments at the New York conference.

Mr. Warriner indicated that the miners would be asked to readjust the present wage rates. The present situation is one, Mr. Warriner said, in which the price of anthracite coal cannot be expected to deviate from the trend of other commodities. There must be deflation, he added, not only in wage rates but in freight rates, as well as in other things.

Mr. Warriner would not say whether or not the operators had agreed upon a definite wage basis to be submitted to the miners as a counter proposal to the miners' demands that the contract wage scale be increased 20 per cent and that all day men be granted an increase of $1 a day.



Production and the Market

Weekly Review

CONSUMER inquiries are the order of the day but the amount of actual business transacted did not increase much last week. The prospect of some kind of an alliance between mine and railroad labor unions and the determination of mine operators to force a showdown in the coming wage struggle have done much to awaken the buyer of coal to the situation, and inquiries for prices are increasing daily. Purchases are still limited, however, the inference being drawn that while there is an urge to prepare for the situation that may have to be faced April 1, there is still time to shop around.

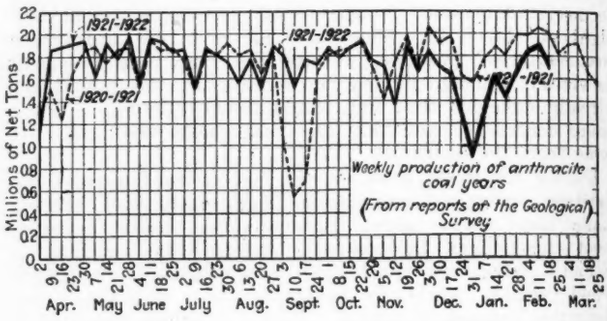
Production has more than equalled demand and while future quotations have an upward trend the spot market feels the effect of the heavy offerings. *Coal Age* Index of spot bituminous coal prices was 180 on Feb. 27, as compared with 182 for the week of Feb. 20. Much depends upon the length of the union tie-up. Railroads and public utilities are actively engaged in stocking coal but the rank and file of consumers are trying to gage the probable duration of the mining interruption, not wanting the settlement of the strike to find them with unnecessarily heavy reserve stocks.

Non-Union Supply Precludes Runaway Market

A runaway market seems improbable, considering the sufficiency of non-union tonnage. Under the impetus of spring trade, however, present industrial tendencies are likely to moderately increase the amount of fuel needed for current use. Any interruption to this manufacturing activity would entail an industrial loss much out of proportion to the difference between present and expected fuel costs.

Some of those who are advocating a delay in taking strike safeguards point to the availability of English coal as one justification of this course in the event of a prolonged controversy. Recent reports emanating from Washington, however, are to the effect that the British also are having their share of labor troubles. There is considerable unrest among Welsh miners and a stoppage in some sections of the British fields is by no means unlikely.

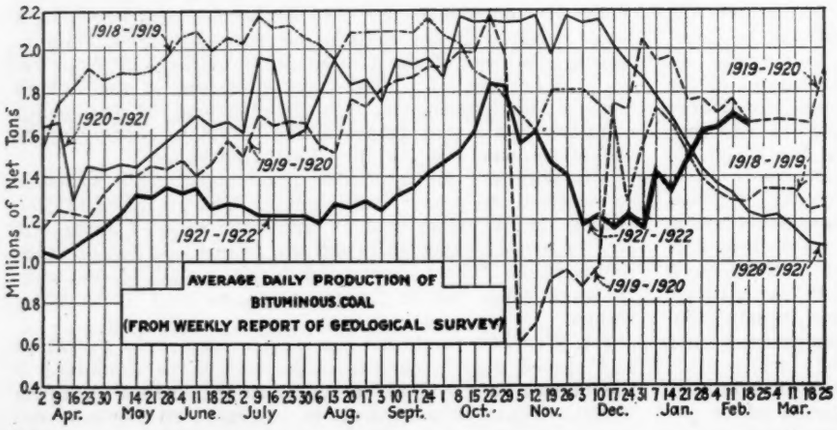
Independent anthracite producers are feeling the effects of a more quiet market. A temporary spurt was experienced with more wintry weather but the demand soon subsided. Dealers are not keeping their stocks replenished and small orders are the outlook for the balance of the season, as the retailer desires to clean up yard stocks before April 1. Barley is the shortest of the steam coals, which still continue to move easily.


1921-1922
1920-1921
1921-1922
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

A conference of miners and anthracite operators will be held in New York City March 15. This announcement was made last week following the adjournment of the policy committee meeting of the Anthracite Coal Operators' Association at Atlantic City.

BITUMINOUS

Production of bituminous coal dropped back slightly during the week ended Feb. 18, according to the Geological Survey. The output was 10,167,000 net tons as compared with 10,317,000 tons in the preceding week. Even with the lowered production the output was much above the level of current needs and probably not less than one million tons went into storage. To build a strike reserve equal to that on the day of the Armistice about 16,000,000 tons would



Estimates of Production

(Net Tons)

BITUMINOUS

	1921–1922	1920–1921
Feb. 4 (*b*)	9,714,000	8,132,000
Feb. 11 (*b*)	10,317,000	7,859,000
Feb. 18 (*a*)	10,167,000	7,489,000
Daily average	1,695,000	1,248,000
Coal year	370,925,000	481,929,000
Daily aver. coal year	1,366,000	1,773,000

ANTHRACITE

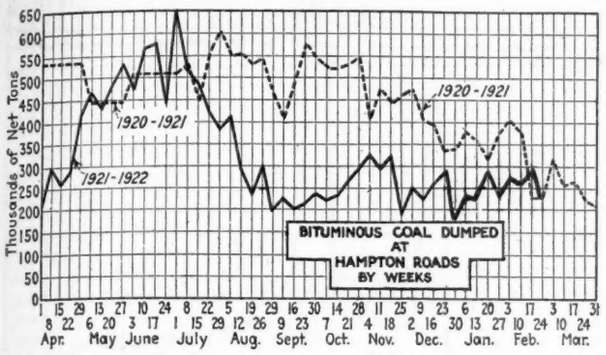
Feb. 11	1,822,000	2,048,000
Feb. 18 (*a*)	1,703,000	2,010,000
Coal year	75,973,000	79,958,000

COKE

	1922	1921
Feb. 11	128,000	228,000
Feb. 18	135,000	219,000
Calendar year	841,000	1,724,000

(*a*) Subject to revision. (*b*) Revised from last report.

have to be put into reserve bins. That a further slump in the following week was unlikely is indicated by the fact that loadings on Monday and Tuesday of that period were increased 5 per cent over the corresponding days of the previous week.


Thousands of Net Tons
1920-1921
1921-1922
1920-1921
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

Hampton Roads dumpings were 234,591 net tons during the week ended Feb. 23, as compared with 296,000 tons in the preceding week. The decrease was mainly caused by the observance of Washington's Birthday, as coastwise business is holding its own and bunkers are stronger. Pier accumulations are less.

About the only effect of the strike talk in the Midwest has been to bring about what in ordinary times would be called a normal steam demand. Southern Illinois producers, in an effort to meet non-union competition and to induce some stocking, have reduced domestic prices 40c. a ton. The householder is displaying an indifferent attitude to the strike situation, and domestic distribution, while better, is still a day-to-day affair, largely influenced by the weather. Fine coals are stronger in this and other sections, but the rise in price is about discounted by the reduction necessary to move domestic tonnage.

A severe blizzard in the Northwest produced many rush orders, but deliveries were hampered by adverse weather conditions. Stocks are being replenished in a cautious way, but prices show no great strength except on screenings, which are in short supply. Winter trade had established some low prices, however, which are now fast disappearing.

New England buyers are less interested than two weeks ago. Reserves have been obtained and a quiet market is in prospect. The textile strike has reduced the demand and light consumption in other lines indicates a long spell of slow business. Marine freights feel the slack buying and have fallen from the high point reached a fortnight ago.

Shipments through the five rail gateways for New England consumption were 3,368 cars during the week ended Feb. 18, 400 cars less than the week before. All-rail shippers

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Jan. 30 1922	Feb. 13 1922	Feb. 20 1922	Feb. 27 1922†
Pocahontas lump	Columbus	$3.30	$3.35	$3.25	$3.15@$3.40
Pocahontas mine run	Columbus	2.15	1.90	2.10	**2.00@ 2.25**
Pocahontas screenings	Columbus	1.55	1.40	1.55	*1.25@ 1.60*
Pocahontas lump	Chicago	2.85	3.15	3.15	2.75@ 3.50
Pocahontas mine run	Chicago	2.15	2.25	2.15	1.75@ 2.50
Pocahontas lump	Cincinnati	3.15	3.15	3.15	3.00@ 3.25
Pocahontas mine run	Cincinnati	2.05	1.85	1.75	1.75
Pocahontas screenings	Cincinnati	1.40	1.15	1.15	1.00@ 1.25
*Smokeless mine run	Boston	4.70	4.80	4.55	**4.50@ 4.70**
Clearfield mine run	Boston	1.95	1.95	1.95	1.65@ 2.25
Cambria mine run	Boston	2.45	2.45	2.45	2.25@ 2.60
Somerset mine run	Boston	1.90	1.90	1.90	1.75@ 2.00
Pool 1 (Navy Standard)	New York	2.85	3.00	3.00	2.75@ 3.25
Pool 1 (Navy Standard)	Philadelphia	3.00	3.05	3.05	2.85@ 3.25
Pool 1 (Navy Standard)	Baltimore	2.70	2.60	2.55	**2.60@ 2.75**
Pool 9 (Super. Low Vol.)	New York	2.20	2.45	2.50	*2.20@ 2.65*
Pool 9 (Super. Low Vol.)	Philadelphia	2.40	2.45	2.45	2.20@ 2.65
Pool 9 (Super. Low Vol.)	Baltimore	2.45	2.30	2.25	**2.25@ 2.50**
Pool 10 (H. Gr. Low Vol.)	New York	2.05	2.10	2.10	*1.90@ 2.10*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.00	2.10	2.10	1.95@ 2.20
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.05	2.05	2.05	**2.05@ 2.15**
Pool 11 (Low Vol.)	New York	1.65	1.75	1.75	1.65@ 1.85
Pool 11 (Low Vol.)	Philadelphia	1.70	1.75	1.75	1.65@ 1.85
Pool 11 (Low Vol.)	Baltimore	1.95	1.75	1.75	**1.85**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.40	1.50	1.50	1.40@ 1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.50	1.50	1.50	1.40@ 1.60
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.40	1.40	1.35@ 1.45
Pittsburgh se'd. gas	Pittsburgh	2.65	2.65	2.65	2.60@ 2.70
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.15	2.15	2.10@ 2.20
Pittsburgh slack (Gas)	Pittsburgh	1.75	1.65	1.65	1.60@ 1.70
Kanawha lump	Columbus	2.50	2.65	2.65	*2.40@ 2.75*
Kanawha mine run	Columbus	1.65	1.65	1.65	*1.50@ 1.75*
Kanawha screenings	Columbus	1.15	1.35	1.30	**1.25@ 1.50**
W. Va. Splint lump	Cincinnati	....	2.65	2.35	*2.25*
W. Va. Gas lump	Cincinnati	2.45	2.00	2.05	*1.85*
W. Va. mine run	Cincinnati	1.35	1.60	1.50	*1.35@ 1.50*
W. Va. screenings	Cincinnati	1.05	1.30	1.20	**1.25@ 1.35**
Hocking lump	Columbus	2.50	2.75	2.65	*2.50@ 2.65*
Hocking mine run	Columbus	1.90	1.90	1.90	1.75@ 2.00
Hocking screenings	Columbus	$1.25	$1.35	$1.30	**$1.40@$1.60**
Pitts. No. 8 lump	Cleveland	3.05	3.10	3.10	3.00@ 3.25
Pitts. No. 8 mine run	Cleveland	2.00	1.95	1.95	**1.95@ 2.00**
Pitts. No. 8 screenings	Cleveland	1.55	1.65	1.65	**1.70@ 1.85**
Midwest					
Franklin, Ill. lump	Chicago	3.65	3.65	3.30	*2.85@ 3.65*
Franklin, Ill. mine run	Chicago	2.35	2.50	2.50	2.25@ 2.75
Franklin, Ill. screenings	Chicago	1.90	1.95	2.00	1.75@ 2.25
Central, Ill. lump	Chicago	3.00	3.00	3.00	2.75@ 3.25
Central, Ill. mine run	Chicago	2.35	2.35	2.35	2.25@ 2.50
Central, Ill. screenings	Chicago	1.50	1.75	1.80	1.70@ 1.90
Ind. 4th Vein lump	Chicago	3.25	3.25	3.25	3.00@ 3.50
Ind. 4th Vein mine run	Chicago	2.40	2.50	2.50	2.35@ 2.65
Ind. 4th Vein screenings	Chicago	1.60	1.90	2.00	1.85@ 2.10
Ind. 5th Vein lump	Chicago	2.95	2.80	3.20	*2.60@ 3.25*
Ind. 5th Vein mine run	Chicago	2.20	2.25	2.25	2.10@ 2.40
Ind. 5th Vein screenings	Chicago	1.45	1.65	1.75	1.65@ 1.85
Standard lump	St. Louis	2.90	2.90	2.75	*2.50@ 2.75*
Standard mine run	St. Louis	2.00	1.90	1.95	1.85@ 2.00
Standard screenings	St. Louis	1.00	1.05	1.20	*1.00@ 1.25*
West. Ky. lump	Louisville	2.60	2.55	2.50	**2.50@ 2.75**
West. Ky. mine run	Louisville	1.90	1.85	1.85	1.70@ 2.00
West Ky. screenings	Louisville	0.95	1.25	1.40	**1.60@ 2.00**
South and Southwest					
Big Seam lump	Birmingham	2.90	2.90	2.90	*2.50@ 2.75*
Big Seam mine run	Birmingham	1.85	1.85	1.85	1.70@ 2.00
Big Seam (washed)	Birmingham	2.10	2.10	2.10	*1.75@ 2.00*
S. E. Ky. lump	Louisville	2.75	2.75	2.60	*2.50@ 2.65*
S. E. Ky. mine run	Louisville	1.55	1.65	1.55	1.50@ 1.65
S. E. Ky. screenings	Louisville	1.10	1.15	1.20	**1.25@ 1.40**
S. E. Ky. lump	Cincinnati	2.75	2.65	2.50	*2.25@ 2.50*
S. E. Ky. mine run	Cincinnati	1.45	1.65	1.50	**1.75**
S. E. Ky. screenings	Cincinnati	0.95	1.05	1.10	**1.00@ 1.25**
Kansas lump	Kansas City	5.00	5.00	5.00	5.00
Kansas mine run	Kansas City	4.00	4.00	4.00	4.00
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Feb. 13, 1922 Independent	Feb. 13, 1922 Company	Feb. 20, 1922 Independent	Feb. 20, 1922 Company	Feb. 27, 1922† Independent	Feb. 27, 1922† Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.00@$7.50	7.75@ 7.85	$7.00@ 7.50	7.75@ 7.85	$7.00@$7.50	7.75@ 7.85
Egg	New York	2.61	7.50@ 7.75	7.60@ 7.75	7.25@ 7.75	7.60@ 7.75	7.25@ 7.75	7.60@ 7.75
Egg	Philadelphia	2.66	7.15@ 7.75	7.75	7.15@ 7.75	7.75	7.15@ 7.75	7.75
Egg	Chicago	5.63	7.50*	7.40*	7.50*	7.40*	7.50*	7.40*
Stove	New York	2.61	7.85@ 8.10	7.90@ 8.10	7.75@ 8.10	7.90@ 8.10	7.75@ 8.10	7.90@ 8.10
Stove	Philadelphia	2.66	7.75@ 8.15	8.05@ 8.25	7.75@ 8.15	8.05@ 8.25	7.75@ 8.15	8.05@ 8.25
Stove	Chicago	5.63	7.75*	7.60*	7.75*	7.60*	7.75*	7.60*
Chestnut	New York	2.61	7.85@ 8.10	7.90@ 8.10	7.85@ 8.10	7.90@ 8.10	7.85@ 8.10	7.90@ 8.10
Chestnut	Philadelphia	2.66	7.75@ 8.15	8.05@ 8.25	7.75@ 8.15	8.05@ 8.25	7.75@ 8.15	8.05@ 8.25
Chestnut	Chicago	5.63	7.75*	7.60*	7.75*	7.60*	7.75*	7.60*
Pea	New York	2.47	5.00@ 5.50	5.75@ 6.50	5.00@ 5.50	5.75@ 6.50	5.00@ 5.25	*5.75@ 6.45*
Pea	Philadelphia	2.38	4.75@ 5.00	6.15@ 6.25	4.75@ 5.00	6.15@ 6.25	4.75@ 5.00	6.15@ 6.25
Pea	Chicago	5.63	6.10*	6.10*	6.10*	6.10*	6.10*	6.10*
Buckwheat No. 1	New York	2.47	3.00@ 3.60	3.50	3.00@ 3.50	3.50	3.00@ 3.50	3.50
Buckwheat No. 1	Philadelphia	2.38	2.75@ 3.25	3.50	2.75@ 3.50	3.50	2.75@ 3.50	3.50
Rice	New York	2.47	2.00@ 2.50	2.50	2.00@ 2.50	2.50	2.00@ 2.50	2.50
Rice	Philadelphia	2.38	1.75@ 2.25	2.50	2.00@ 2.25	2.50	**2.00@ 2.50**	2.50
Barley	New York	2.47	1.50@ 1.75	1.50	1.50@ 1.75	1.50	1.50@ 1.75	1.50
Barley	Philadelphia	2.38	1.00@ 1.75	1.50	1.25@ 1.75	1.50	**1.50@ 1.75**	1.50
Birdseye	New York	2.47	.....	2.00@ 2.50	.....	2.00@ 2.50	1.60@ 1.90	2.00@ 2.50

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**, declines in *italics*.

are a little more active in that territory, as private wage agreements at some mines have permitted a more nearly competitive basis with the Southern coals. Detailed record of New England receipts during 1921 and recent years are shown in the following tables:

RECEIPTS OF COAL IN NEW ENGLAND BY TIDE AND RAIL IN 1921
(In Thousands of Net Tons)

Month	Anthracite Tide	Anthracite Rail	Anthracite Total	Bituminous Tide	Bituminous Rail	Bituminous Total
January	316	643	959	707	981	1,688
February	350	764	1,114	544	721	1,265
March	304	899	1,203	594	741	1,335
April	306	599	905	604	586	1,190
May	374	667	1,041	588	650	1,238
June	387	685	1,072	759	799	1,558
July	309	652	961	612	634	1,246
August	254	534	788	810	690	1,500
September	243	445	688	824	644	1,468
October	324	595	919	1,003	644	1,647
November	255	615	870	869	712	1,581
December	273	581	854	900	572	1,472
Total	3,695	7,679	11,374	8,814	8,374	17,188

RECEIPTS OF COAL IN NEW ENGLAND, 1916—1921
(In Net Tons)

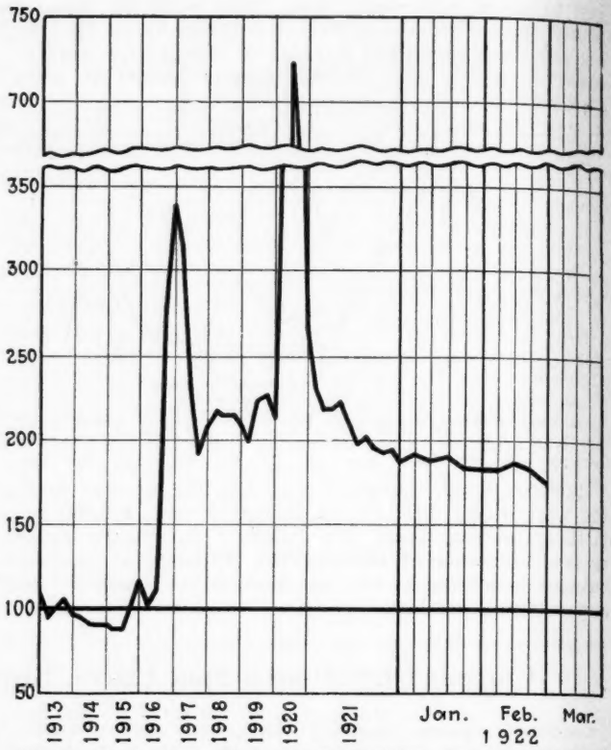
Year	Anthracite Tide	Anthracite Rail	Anthracite Tide and Rail
1916	5,228,000	5,487,000	10,715,000
1917	4,421,000	7,259,000	11,680,000
1918	4,117,000	9,504,000	13,621,000
1919	3,310,000	7,268,000	10,578,000
1920	3,521,000	7,734,000	11,255,000
1921	3,695,000	7,679,000	11,374,000
	Bituminous		
1916	14,193,000	9,929,000	24,122,000
1917	12,693,000	10,811,000	23,504,000
1918	16,057,000	11,114,000	27,171,000
1919	8,527,000	9,655,000	18,182,000
1920	10,211,000	12,223,000	22,434,000
1921	8,814,000	8,374,000	17,188,000

COKE

Beehive coke production continues to increase. During the third week of February 135,000 net tons were produced, as compared with 128,000 tons in the previous week. Orders are coming in more freely and prices are firm at the higher range quoted late in February. In the Connellsville region the better demand for coal is affecting forward quotations on coke.

ANTHRACITE

Based on carriers' reports, production during the week ended Feb. 18 was 1,703,000 net tons, 119,000 tons less than during the previous week. Retail stocks are still good and, while more householders have been ordering, the business done is in small lots. The retailer is in no great hurry to replenish domestic supplies and a softening independent market is the result. The New England section, however, is more active and some shippers are behind on their orders. All-rail New England movement was 2,812 cars during the week ended Feb. 18, as compared with 2,967 cars in the preceding week.



Coal Age Index, 180, Week of Feb. 27, 1922. Average spot price for same period, $2.18. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. The result is a series of index numbers, plotted in the above diagram.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

NEW SOUTH WALES—Exports of coal from Newcastle during January were 362,000 tons.

ITALY. — The price for Cardiff best steam is now 39s., according to a cable to *Coal Age*. Last week's quotations was 38s. 9d.

GERMANY. — German coal prices are due for another increase, probably by 200 marks a ton, effective March 1, thereby reaching the level of world market prices.

SPAIN.—The following are the latest quotations for Asturian coal, free on truck: Screened, best, 60 pesetas, screened, ordinary, 58, large, best, 60 and large, ordinary, 58.

BELGIUM. — The fall in the price of coal tends to spread, the reduction on certain descriptions amounting to 6 fr. It is thought that the reduction should reach at least 10 fr. as transactions with English firms have been carried out at prices varying from 7 to 10 fr. below the Belgian prices after the fall mentioned. The coke market is still active.

Hampton Roads Pier Situation

	Week Ended Feb. 16	Week Ended Feb. 23
N. & W. Piers, Lamberts Point:		
Cars on hand	2,400	1,889
Tons on hand	140,000	109,520
Tons dumped	137,394	101,143
Tonnage waiting	7,090	.....
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,517	1,859
Tons on hand	75,850	93,450
Tons dumped	75,090	56,206
Tonnage waiting	7,660	37,654
C. & O. Piers, Newport News:		
Cars on hand	1,499	1,655
Tons on hand	74,950	87,750
Tons dumped	51,735	52,108
Tonnage waiting	.....	9,600

Production and Stocks of Coal in France, December, 1921

(IN METRIC TONS)

District	Total Mined Coal	Total Mined Lignite	Stocks at Mines, Dec. 31, 1921 Coal	Stocks at Mines, Dec. 31, 1921 Lignite	Stocks at Mines, Dec. 31, 1921 Coke	Stocks at Mines, Dec. 31, 1921 Briquets
Arras	.....	.....	.....	.....	.....	.....
Douai	574,815	.....	412,620	.....	361	1,314
Saint-Etienne	318,345	.....	134,095	.....	8,694	2,642
Lyon	213,050	286	107,674	.....	.....	5,947
Clermont-Ferrand	119,707	.....	63,567	.....	.....	.....
Alais	167,868	2,220	91,993	547	12	3,842
Toulouse	151,477	168	83,340	420	2,804	9,284
Marseille	2,443	68,630	2,373	11,441	.....	.....
Nantes	4,891	.....	16,691	.....	.....	28
Bordeaux	6,531	857	16,457	87	.....	2,008
Nancy	9,432	69	16,325	.....	1,242	.....
Strasbourg	359,285	.....	42,293	.....	2,794	.....
Total	1,927,844	72,230	987,428	12,495	15,907	25,065
Sarre	928,498	.....	689,652	.....	782	.....
Grand total	2,856,342	72,230	1,677,080	12,495	16,689	25,065

British Output Increases Nearly 100,000 Tons; Export Demand Causes Price Advance

PRODUCTION in Great Britain continues to increase. The output during the week ended Feb. 11 was 4,900,000 gross tons, according to a cable to *Coal Age*, as compared with 4,803,000 tons in the preceding week. Advancing prices have followed an increased export demand. The Italian market is feeling the German railway trouble and this has resulted in heavier buying of Welsh grades.

Greater activity is being shown in coking coals and coke now than at any time since the beginning of last year. Inquiries in these classes are becoming numerous, especially in the north of England. Scotland also reports greater activity in almost all branches of the industry.

The miners have conferred with the owners on the question of wages, when it transpired that seven of the districts under the Miners' Federation are on the minimum wage, and that in every district there has been a fall in wages.

After a meeting of the National Board the following statement was issued: The Board reviewed the position in which the industry is now placed. It was found that the wages of the workmen are unprecedently low in many districts. In seven out of the thirteen areas scheduled in the agreement wages have been brought down to the minimum, and in spite of this fact serious losses are being incurred. It was decided that a special joint committee be appointed to consider the effect of German reparation coal on the British trade, and to report to a full meeting of the Board, at which meeting the whole position of the trade will be further considered.

The Scottish railway companies have now fallen into line with their English companies and have announced reductions in the rates for carrying coal, coke and patent fuel for blast furnaces and steel works. The 100 per cent increase on the rates of January, 1920, has been reduced by 25 per cent, and the flat rate of 6d. per ton has been reduced by 2d.

Hampton Roads Market Is Firmer

With the exception of holiday idleness, business moved as usual during the latter part of February, with possibly more activity. The market was firmer in all quarters, and prices were stronger.

Coastwise movement held its own. The bunker trade continued to increase slightly, in line with the steady growth of general shipping.

Much interest was aroused by a visit of a delegation of Brazilian officials and business men, who forecasted for Hampton Roads a larger trade with their country. The development of Virginia's own mineral resources, for shipment through Virginia's port, is a part of a trade revival program now being conducted, and which was given impetus by the visit of these officials.

British Coal Exports in 1921

DESTINATIONS OF EXPORTS DURING 1921.

Country	Seven Months Ended July 30 Tons	Five Months Ended Dec. 31 Tons	Total, 1921 Tons
France	1,687,417	4,708,234	6,395,651
Italy	1,136,251	2,246,832	3,383,083
Denmark	536,216	1,267,345	1,803,561
Netherlands	426,721	1,360,957	1,787,678
Sweden	228,847	1,004,057	1,232,904
Spain	428,108	593,370	1,021,472
Orgentine	253,108	634,236	887,344
Arasil	25,189	217,034	242,223
Bigeria	174,107	281,257	455,362
Ather countries	1,945,804	5,505,462	7,451,272
Total	6,841,768	17,818,784	24,660,552

MONTHLY EXPORTS, 1913, 1920 AND 1921.

Month	1913 Tons	1920 Tons	1921 Tons
Jan	6,070,318	3,358,572	1,700,106
Feb	5,569,917	2,601,046	1,729,148
March	5,598,774	2,406,151	1,968,078
April	6,350,869	1,995,895	606,548
May	5,929,947	2,139,261	14,066
June	6,006,410	1,930,608	7,502
July	6,975,211	2,096,996	816,320
Aug	5,819,162	1,847,403	3,103,207
Sept	6,197,180	1,475,623	3,406,579
Oct	6,739,473	1,417,498	3,405,972
Nov	5,913,404	1,360,724	3,593,864
Dec	6,229,453	2,302,076	4,309,162
Total	73,400,118	24,931,833	24,660,552

BRITISH EXPORT PRICES, TOTAL COAL, 1921

Month	F.o.b. price s.	d.	Month	F.o.b. price s.	d.
January	65	4	August	36	6
February	49	0	September	30	6
March	43	6	October	28	5
April	43	2	November	27	1
July	38	2	December	24	10

French Mine Stocks Accumulating; Lower Costs Necessary

Total production of the French mines during 1921 was 28,241,000 metric tons of coal and 736,000 tons of lignite, or approximately 75 per cent of the normal output. Actual consumption has been approximately 45 million tons as against 75 million tons used in France (including Alsace) in 1913.

The French mines, specially in the Northern districts, are still accumulating large tonnages of coals, on account of their being unable to beat British coals, which more and more invade their markets. The recent reductions in wages accepted by the miners are considered absolutely insufficient to enable any serious reduction in price. In fact, same were only 3.50 francs per ton, and previous to this reduction wages were 270 per cent higher than the pre-war standards. In England the average reduction in wages enforced was as high as 50 per cent.

As against steady reductions of prices here, from Germany comes the news of a further increase of 30 marks per ton, this on top of the 50 marks increase already enforced at the beginning of February. Of course, on account of the rate of exchange, this only means a few francs, and still leaves the price of German coals at figures much below any other.

After a few days really cold weather, which stimulated business to a small extent in domestic compartments, mild weather has again set in and there is hardly any chance of seeing the collieries' position improve on this account.

Pier and Bunker Prices, Gross Tons

	Feb. 18	Feb. 25†
PIERS		
Pool 9, New York	$5.45@$5.90	*$5.45@$5.75*
Pool 10, New York	5.25@ 5.50	*5.25@ 5.40*
Pool 9, Philadelphia	5.60@ 5.95	*5.60@ 5.90*
Pool 10, Philadelphia	5.35@ 5.60	*5.25@ 5.60*
Pool 71, Philadelphia	5.70@ 6.05	*5.70@ 6.00*
Pool 1, Hamp. Rds	4.65	4.65
Pools 5-6-7 Hamp. Rds	4.35	*4.25*
Pool 2, Hamp. Rds	4.50	4.50
BUNKERS		
Pool 9, New York	5.80@ 6.20	*5.70@ 6.05*
Pool 10, New York	5.60@ 5.85	*5.55@ 5.75*
Pool 9, Philadelphia	5.95@ 6.20	*5.90@ 6.15*
Pool 10, Philadelphia	5.75@ 5.90	*5.70@ 5.85*
Pool 1, Hamp. Rds	4.80	4.80
Pool 2, Hamp. Rds	4.60	4.60
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	55s. f.o.b.	55s. f.o.b.
Welsh, Lisbon	40s. f.o.b.	40s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	39s. t.i.b.	39s. t.i.b.
Welsh, Messina	36s. 6d. t.i.b.	36s. 6d. t.i.b.
Welsh, Algiers	34s. f.o.b.	34s. f.o.b.
Welsh, Pernambueo	62s. 6d. f.o.b.	62s. 6d. f.o.b.
Welsh, Bahia	62s. 6d. f.o.b.	62s. 6d. f.o.b.
Welsh, Madeira	40s. f.a.s.	40s. f.a.s.
Welsh, Teneriffe	40s. f.a.s.	40s. f.a.s.
Welsh, Malta	40s. f.o.b.	40s. f.o.b.
Welsh, Las Palmas	40s. f.a.s.	40s. f.a.s.
Welsh, Naples	39s. f.o.b.	39s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	55s. f.o.b.	55s. f.o.b.
Port Said	46s. 6d. f.o.b.	46s. 6d. f.o.b.
Belgian, Antwerp	30s.	30s.
Alexandria	43s.	47s.
Bombay	38 rupees	38 rupees
Capetown	42s.	42s.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Feb. 18	Feb. 25†
Admiralty, Large	25s. 3d.	27s.@27s. 6d.
Steam, Smalls	18s. 6d.	19s. 6d. @ 20s.
Newcastle:		
Best Steams	24s. 9d.	25s.
Best Gas	23s.	23s. @ 24s.
Best Bunkers	23s.	22s. 6d.@23s.

† Advances over previous week, shown in heavy type; declines in *italics*.

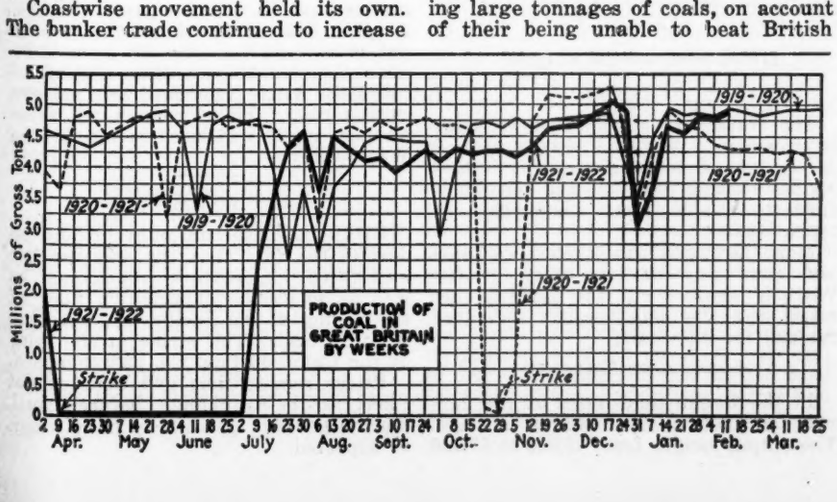
Export Clearances, Week Ended Feb. 23, 1922

FROM HAMPTON ROADS

For Africa	Tons
Br. S.S. Hartfield, for Dakar	6,492
For Atlantic Islands:	
Am. S.S. Cananova, for Kingston	1,490
Nor. S.S. Runa, for Teneriffe	891
For Cuba:	
Dan. S.S. Olaf L. Konstad, for Havana	3,150
Am. S.S. Glyndon, for Santiago	2,099
For Italy:	
Ital. S.S. Brenta, for Porto Ferrajo	7,414

FROM PHILADELPHIA:

For Brazil:	
Nor. S.S. Valdemar Skogland, for Rio de Janeiro	....
For Cuba:	
Nor. S.S. Certo, for Antilla	....



Cincinnati Gateway

Flood of Inquiries Appears; Some Gain in Orders Also

Much "Shopping" Being Done—Output Runs Ahead of the Demand—Higher Gas Rate Helps Cincinnati Retailers.

MORE requests for prices are being received and while orders have increased they have not kept pace with the flood of inquiries now appearing. The inference is being drawn that while there is an urge to prepare for the situation that may have to be faced on April 1, there is still time to shop around. The probable sufficiency of non-union tonnage makes a runaway market seem unlikely.

Domestic demand fluctuates with the weather, but the aggregate amount moved is heavier. Retail business at Cincinnati has been stimulated by the leap in gas rates. Increased low-volatile production softened prices a trifle last week. Storage piles are being enlarged but there also is some improvement to be noted in steam requirements. That the output has again exceeded the demand is indicated by an increasing number of "no-bills."

CINCINNATI

While the flow of business is just a little bit above what might have been considered normal for the past six months, a flood of inquiries for prices has been the chief feature of the market this week. This, however, has not been resultant of many buying orders being placed.

Kentucky operators and local sales agents are again pressing the price on nut and slack upward, most of the firms asking $1.25 for screenings but willing to take a dime less under pressure. The upward climb too, has resulted in smaller sales at the upper figure. West Virginia still holds at $1.25@$1.35 and this is so near to the mine run price that there can be but little further advance. Lump and domestic bituminous is neglected and as a result the better splints have fallen to a parity with the better grades of gas, while low-grades of the latter are down another dime.

Low-volatile offerings of lump and egg for March delivery are still unnamed as to price. Most firms are still working on orders booked two or three weeks ago.

Retail business has been strengthened by the gas situation. Bills under the new rate leaped tremendously and families that could burn coal for fuel have been ordering heavily of the smokeless lump. Prices: Smokeless lump, $8, run of mine, $6.50@$6.75; slack, $5; bituminous lump, $6.75@$7.25; run of mine, $5.75 and slack, $4.50@$4.75.

LOW-VOLATILE FIELDS

New River and the Gulf

Due to a weaker demand, prices on New River prepared coals declined slightly last week, although production was not materially affected. Coal moving unsold to Western markets had a tendency to soften quotations, which was offset by a better position at Tidewater.

Gulf mines are more active with the major portion of the tonnage destined for Tidewater and Inland East points. Some additional orders are being placed because of the strike situation but this class of business is not on a large scale.

Pocahontas and Tug River

Demand for Pocahontas coal was brisk enough to permit an output of about 300,000 tons during the week ended Feb. 18. Some unfilled tonnage was accumulating in the West which had a softening tendency on prices. However, New England and Tidewater markets were improved. Much of the coal is moving on short-time contracts.

Tug River production is climbing steadily upward. More coal is being utilized in the steel industry, some of the large steel concerns being regularly supplied from this field. The strike fear has also stimulated the demand and production would have been even larger had producers been able to overcome a shortage of cars which entailed a loss of about 6 per cent of potential capacity.

SOUTHEASTERN KENTUCKY

There has been a slight increase in production. The greatest activity is in nut and slack, the price of which has advanced 25c. in some cases. Block, on the other hand, has decreased in price and the one about offsets the other. Based on mine run, there is little difference in the average price.

Block continues to be strictly a weather proposition. Dealers are ordering in small lots and only when stocks are low. Due to the heavy demand for fine coals and the growing scarcity it is believed that mine run will be in better demand in the near future. As yet there seems to be little stocking coal moving.

HIGH-VOLATILE FIELDS

Kanawha

The market as a whole shows some improvement, with the output around 25 per cent of potential capacity. Buying for storage purposes has been sufficient to enable some resumption of operations.

More strength was shown by mine run than any of the other grades. Warmer weather cut the domestic demand and this has slightly increased the call for fine coals.

Logan and Thacker

In the Logan field much of the current production is going to storage. The output ranges from 45,000 to 55,000 tons daily. However, buying is not on so large a scale as was expected. Much of the coal is moving on short-time contracts.

Thacker production is on a larger scale, estimated at more than 50 per cent of capacity. The bulk of the output is moving to Western markets. There is a better demand for mine run than for other grades.

Northeastern Kentucky

Although prepared demand is decidedly uncertain there is a better call for steam coal, having its origin in the danger of a strike next month. Producers are keeping their coal on the open market, not feeling it necessary to enter into contracts until it is known what the strike situation will be. Inquiries are decidedly more numerous but many of them are "feelers."

West

DENVER

Five hundred miners in the Frederick lignite field are preparing to walk out unless operators restore the 30 per cent wage cut which they announced several days ago. The new wage is similar to that put into effect some months ago in the bituminous field by the Colorado Fuel & Iron Co. Some of the mines in nearby lignite districts have effected an agreement at the reduced wage.

Colorado's output is nearer normal than it has been for many months, due to cold spells. The slack market is still weak, but not as hopeless as it was several weeks ago, when a good deal of lignite steam was unloaded at $2, virtually what it cost to bring it to Denver. The list price is $3.20, having been reduced from $4.50.

Bituminous slack is bringing $2.50 at the mine in Trinidad and is retailing for $6.60, while Walsenburg or Routt steam, with a $2 mine price, is bringing $5.45.

KANSAS CITY

The most encouraging thing we have had in a long time is the strengthened price of grain, also a more encouraging outlet for the live stock industry. Added to this, all of the wheat-growing territory had good rains last week.

It looks like the United Mine Workers would make some concession and a prolonged strike is not looked for.

Buying is a little better than normal, basing same on the past twelve months. A great deal of coal has already been put in storage and even if there is no miners' strike, there will be a light demand for some time until this storage coal is used. Prices remain the same as last week and are quoted in the Weekly Review.

SALT LAKE CITY

Retail business continues to hold up despite the fact that the weather has moderated. Operators are doing as well as might be expected in view of the closing of the Pacific Coast market to Utah coal. The strike at the mine of the Cameron Coal Co. has collapsed.

Prices remain firm and there is not likely to be a change before April, when a general lowering of mine wages is expected.

Anthracite

Business Lags; Cut in Mine And Freight Costs Awaited

Domestic Outlook Is Poor, as Householders and Retailers Keep Orders to Minimum—Independent Prices Soften —Steam Coals in Good Demand, with Prices Firm.

PRODUCTION of anthracite is dropping off. Domestic trading is again quiet after a brief spurt caused by the cold spell. Small orders are the outlook for the balance of the season, as the householder plans to eke out the season on the barest requirements, while retailers generally express a desire to have low stocks on hand April 1.

Independent prices have softened with the continuance of this program. Steam coals, on the other hand, continue in good call and quotations remain firm. Much interest centers on developments in the strike situation but expectations of lowered mine and transportation costs to come are factors making for slow current business.

NEW YORK

Demand for the domestic coals is not so strong. Retail dealers are receiving many requests for immediate deliveries, indicating that consumers are buying only sufficient coal to keep their furnaces going. Dealers on the other hand are not taking any chances but are keeping their bins and in some instances the vacant spaces in their yards filled.

Some wholesale offices have sufficient business booked to carry them into the middle of March. Line trade is active, pea size excepted. Considerable interest is being taken in the new sized coals which will shortly be offered.

When it becomes apparent that the mine workers will suspend work on April 1 it is expected there will be a rush of orders. There are many, however, who appear willing to take chances with the prospects of lower freight rates and a reduction in mine wages to result in a lower price for coal.

Of the steam coals barley remains the shortest with the better grades being held at a premium of 20@25c. Buckwheat is easier. Some independent birdseye coal was offered here at prices less than $2.

PHILADELPHIA

Even though the rigors of winter have departed, the retailers have done a fair business of late. The principal cause of fair ordering is that so many consumers burned their entire stocks during the severe weather just passed. Buying is not heavy and all business seems to be rush orders.

Stocks of all sizes in the yards have been noticeably reduced, and the inroads upon pea coal has been especially marked. Some of the companies are putting a little pea into storage.

Nut is the size in greatest demand, and most yards are fairly well supplied. The new "range" size is being given a fair testing by some of the larger and more progressive retailers, one of whom has adopted an advertising campaign of education, pricing the coal at $12.75.

Steam coals continue in active demand, and some companies have picked up the major portion of barley they have had in storage. There is still a fair stock of buckwheat on hand, but it is moving fast.

BALTIMORE

The present winter has been so mild and householders have practiced such economies that the seasonal consumption has been far below normal. It was this fact that has left some of the coal dealers with considerable stocks on hand, despite the light deliveries from mines. While some of the dealers here are fairly well cleaned up on their stocks there are others who have more on hand than will prove comfortable should the threatened strike fail to mature.

BOSTON

While spot demand is more moderate than a fortnight ago, due then to the extreme cold that continued for several days, there is a reasonably steady call for domestic sizes, especially chestnut. We look to see a wholesale request all the month from retail dealers who have about decided it would be only common prudence to have coal on hand April 1 to carry them to May 15, and possibly to the end of May.

The long-expected freight rate reduction, it is realized, will hardly materialize this spring, and that makes it easier for the small distributor to make plans. There has been enough newspaper discussion already to cause mild apprehension on the part of householders, but more than a few in the trade feel there will be less scare buying when the suspension comes than has been the case in other years.

BUFFALO

A spurt of activity occurred during the latter part of last week, owing to the dip in temperature. Dealers received more orders than for many weeks past, and they were inclined to place orders to replete their stocks, but now the reaction has come and trade is flat.

Small buying on the consumers' part will undoubtedly be the rule during the remainder of the winter and dealers are planning to keep only a few weeks' tonnage on hand. The natural gas supply has been good this winter, and this has meant a loss of a great deal of coal business.

Nothing has been done toward loading cargo coal here for the opening of navigation, and the start is expected to be late. There is no urgent need of getting coal forwarded early, and not much interest is being taken by Lake purchasers.

Coke

CONNELLSVILLE

The coke market has failed to stiffen further after last week's advance, which was caused by the sudden development of a demand for prompt furnace coke, now apparently satisfied. There had been no demand for spot or prompt furnace coke for several weeks, except the small demand from miscellaneous consumers, when two or three furnaces suddenly came into the market, causing a sharp recovery in prices.

This buying seems to be over, except perhaps in the case of one furnace, while there has been a material increase in production. This may bring about a weaker market again. However, three or four furnaces contemplate getting into blast again and if they buy coke the purchases will easily support the situation.

The predicted condition, of coal being worth much more as such than when converted into coke, has not arrived, for it requires good coal or good salesmanship to bring a price above $1.50, making $2.25 for the coal required for a ton of coke which with 75c. for coking would make $3, while the furnace coke market last week rose to a range of $3.25@$3.50.

The *Courier* reports production in the week ended Feb. 18 at 63,440 tons by the furnace ovens and 59,150 tons by the merchant ovens, making a total of 102,590 tons, an increase of 11,070 tons.

UNIONTOWN

While conditions, as a whole, have not yet reached the point accepted as "good business" the activity around selling offices has shown such a turn, that when compared with the dullness of the past year, it assumes a very optimistic aspect.

Consumers have finally commenced to look to their coal requirements and are placing orders for immediate delivery. At first there was a tendency on the part of consumers to have deliveries started in the middle of March but with the alliance of the mine workers and transportation employees came the possibility that difficulty would be experienced in getting deliveries during the strike period and consumers seem now to want to have coal stocked at their plants to be prepared for any emergency that may arise.

Quotations on grades of coal have taken a slight advance. Pittsburgh steam coal is quoted $1.50@$1.60, Sewickley steam, $1.35@$1.45, with by-product at a range of $1.75@$2.

The coke market continues stronger with quotations seeking new levels almost daily as consumers search the region for tonnage.

BUFFALO

Delays are encountered in the shipment of domestic coke from the ovens, indicating that a good many orders are on hand. As much as two weeks' time is required to get shipments of some of the larger sizes. Prices are strong, at $4.25@$4.50 for Connellsville foundry, $3.25@$3.50 for 48-hr. furnace, which is scarce, and $2.75@$2.85 for stock, with some domestic sizes bringing $2.75@$2.85, to which add $3.64 for freight.

Eastern Inland

Impending Strike Fails to Boost Business as Expected

Stocking Confined Mostly to Railroads and Utilities—Industrials Ask Prices, but Postpone Purchases—Duration of Tie-up Controlling Factor.

EASTERN Inland markets have failed to measure up to the expectations of a better demand with the strike impending. More coal is moving but the stocking movement has largely been confined to railroads and public utilities. Most industrial users are interesting themselves in asking for prices and delaying their purchases until a later date. The probable length of the tie-up is the uncertain factor in the situation, and buyers are endeavoring to get a clearer indication of this time element before covering their requirements.

Prices at best are only holding firm. Non-union mines continue to obtain the cream of the business offering, as coal is still easily obtainable below the range of asking prices in the closed-shop districts.

CLEVELAND

The past few days have brought some further increase in inquiries for storage coal, but the demand is still far short of the rush predicted when the strike first seemed probable. Just how far the present buying movement will develop remains to be seen, but present indications are that it will expand to only moderate proportions.

Many consumers who, a few weeks ago, were inclined to doubt the probability of a strike are now definitely counting upon one. There is still a large number, however, who persist in the belief that the strike will be short-lived.

As a result of this uncertainty about the outcome of the struggle together with reduced industrial activity, buying still is limited. There are some features in the business outlook, however, which are encouraging. Steel mill operations in this district are improving, automobile plants are active and the rubber tire output at Akron is 100 per cent greater than one year ago.

Under the impetus of spring trade activities present tendencies in business are almost certain to grow into something akin to a moderate business revival. A coal strike to maintain war wages, and resistance of railroad employes to wage adjustments, may check the improvement and set the industrial situation back seriously.

BUFFALO

Trade shows less activity than a couple of weeks ago, and little concern is expressed over the strike situation. The majority of plants seem to be well supplied for the time being, with stocks in many cases big enough to last until May. Some factory plans for expansion have been given up for the time being, because of the feeling that raw materials are likely to be cheaper with lower freight rates.

Such spurts as occur are due largely to the weather. Little optimism is displayed over the possibility that trade will pick up within the next two or three weeks.

Some easing off in prices has been taking place lately, especially in slack, which had been in comparatively active demand. Quotations are: $2.65 for Youghiogheny gas lump, $2.40 for Pittsburgh and No. 8 steam lump, $2.15 for Allegheny Valley and other mine run and $1.40@$1.75 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals, to cover freight.

COLUMBUS

Some strength is developing in steam sizes as the result of the increasing probabilities of a strike. Steam users are taking advantage of the heavy offerings and are buying quietly to guard against the emergency, but buying is not nearly as lively as might be expected under the circumstances. Ths is attributed largely to the general belief that the non-union production will take care of the greater part of the demand and also that the strike may not last any great time.

The market for domestic sizes is quiet in most respects. Retail stocks are only fair but there is no general movement on the part of dealers to increase them under present conditions.

Production is holding up well and increasing in some sections. Reports show an output of about 32 per cent in the Hocking Valley. Pomeroy Bend, Crooksville and Cambridge districts are producing about 25 per cent. Screenings are especially strong.

With the officials of the union in Ohio refusing to meet with the operators of the Southern Ohio field in the formation of a wage scale, there is sure to be a suspension of mining.

EASTERN OHIO

Production continues firm at the higher ratio recently attained, namely, a little better than 60 per cent of potential capacity. The total mined during the week ended Feb. 18 was 374,000 tons, an increase of 2,000 tons over the preceding week.

However, the demand for storage fuel has not as yet reached anything like that which existed prior to the anticipated tie-up on the railroads last fall. As yet the only significant movement of storage fuel is to the railroads and public utilities. Manufacturers generally continue to procrastinate. It is asserted that the carriers are taking somewhere between 40 and 45 per cent of output at the present rate of production.

Association mines are working about 50 per cent of full time. Mines on the B. &. O., on whose rails over half the mines in the field are situated, are reported to be working about 40 per cent of full time, those on the Pennsylvania a little better than 50 per cent, and on the W. & L. E. over 60 per cent.

The prediction is made that within the next two weeks the rank and file of industrial and manufacturing plants will become more actively concerned about their fuel bins. Spot prices have already begun to display stiffening tendencies. Slack has moved up 10c. and a wider range is noticeable with tops a little higher than those previously prevailing.

PITTSBURGH

There are no important developments in the wage scale matter. The Pittsburgh district operators have made no public moves, and are resting on their position that they are ready to meet the miners in conference, provided the check-off is eliminated from the discussion. Privately, no doubt, they are endeavoring to ascertain the attitude of the men as to individual acceptance of the scale they have posted.

Some observers are of the opinion that the men will accept, though perhaps not on the very first day after the present scale expires. The United Mine Workers are going through the formality of taking a strike vote on the operators' refusal to meet as the central competitive field. As such votes are invariably announced as having proved affirmative the operation arouses no interest.

Inquiry has perhaps increased but actual buying is only a trifle heavier and, as formerly, nearly all the orders go to the non-union districts. This demand is not sufficient to put up prices to any extent, Connellsville steam coal being $1.50@$1.60, with byproduct at $1.75@$2, and good grades of gas at about $1.90.

Pittsburgh asking prices, remain as follows: Steam slack, $1.30@$1.50; gas slack, $1.60@$1.70; steam mine run and ordinary gas, $2.10@$2.20; ¾-in., $2.60@$2.70; Panhandle 1¼-in. domestic lump, $2.75@$2.90; high grade gas mine run, $2.75@$3.

DETROIT

There is not very much interest manifested in the local market. The prospect of a strike is producing very little additional business and few buyers show any disposition to create reserves.

Buyers apparently are disinclined to take much coal until they are able to get a better line on the probable course of business through the coming months.

Smokeless lump and egg is $3.25, mine run, $2; nut and slack, $1.50. West Virginia 4-in. lump is $2.65@$2.75; 2-in. lump, $2.15@$2.25; egg, $2; mine run, $1.50; nut and slack, $1.35. Ohio 3-in. lump is $2.85; 1¼-in. lump, $2.50; egg, $2.25; mine run, $1.85; nut and slack, $1.40. Pittsburgh No. 8 1¼-in. lump is $2.35; ¾-in. lump, $2.25; mine run, $1.90@$2; nut and slack, $1.65@$1.75.

NORTHERN PANHANDLE

Increasing interest in future coal supplies has not as yet caused a rush of orders. Railroad fuel business is still the mainstay of production. With future wages uncertain no contracts are being made except for extremely short periods.

North Atlantic

Buyers Await Developments, Undisturbed at Outlook

Apparent Certainty of Strike Fails to Stimulate Markets Much—Inquiries for Quotations Principal Activity Noted—Unconsigned Coal Appears—Danger Seen in Continuance of Heavy Receipts.

DESPITE the growing certainty of a strike not much stimulus was felt in North Atlantic markets last week. Consumers are watching developments rather than looking to safeguarding their fuel supply. The feeling prevails among buyers that there will be plenty of coal available between now and April 1, and inquiries for quotations constitute their main activity.

Unconsigned tonnage is appearing, having been shipped in anticipation of a more healthy demand. This has been absorbed with but little softening of prices as yet. A continuance of the heavier receipts, however, will have a depressing tendency if the expected demand fails to materialize.

NEW YORK

Movement continues good but most of it is on contract. The line trade leads that at Tidewater. Free coals are not moving with the vim that might be expected for this time of the year. However, unless all signs and predictions of those who ought to know fail, this inactivity is not for long. Many of the trade expect a revival of business within the next couple of weeks.

Consumers at present are not buying save for immediate requirements except in isolated instances where buyers are stocking up against a possible strike on April 1. In the latter class are some consumers who already have large reserve stocks.

Although there is considerable coal reported at the local piers, quotations do not show any appreciable change, except that in some instances the range is wider. With production increasing unconsigned coals continue to be shipped here but it has not become so large as to force prices down.

BALTIMORE

While there are some spurt spots in buying from time to time and individual tightening in sales price, the situation as a whole continues most unsatisfactory. The export movement has fallen into the discard.

The move of the Government to force a conference for settlement of the wage dispute has undoubtedly strengthened the apathetic feeling in the minds of the general public.

The price situation is exceptionally weak. As a general thing, the effort of the producers to force better prices has ended in failure because of the public's refusal to buy in any considerable quantity. The market at this writing is a little better than a week ago, when gas coals of all kinds were particularly weak. While low-grade Fairmont coals are still on a very low basis there is an improvement noted as to price for some of the better grade gas productions.

UPPER POTOMAC

Production is still very low although there has been some slight improvement lately from the almost complete idleness in evidence during January. Some few mines have resumed operations on a lower wage scale. Railroad fuel is in better call and the likelihood of a strike is bringing more forward business.

PHILADELPHIA

There are fluctuating reports as to the demand for soft coal, but even though industrial conditions are inclined to remain in a laggard state, the ordering of coal has not lost any ground.

Smaller consumers are keeping ahead by a slight margin and probably buying just a least bit more actively. The real big consumers seem to have about 45- to 60-days' margin ahead, based on present consumption.

All houses are laying stress on the fact that spot quotations mean just that and cannot be held out for several weeks. Nothing is being done as to contracts. It is quite likely that shippers will endeavor to take care of their customers, so far as they can, on the basis of the spot market following April 1, as there is a growing belief that there will be a good tonnage of non-union coal to be had.

CENTRAL PENNSYLVANIA

Coal operators of this field are watching labor developments and are of the opinion that the adoption of the miners' policy to stand pat on the present wage scale will undoubtedly result in a suspension of operations in this district.

There is much interest shown in that part of the committee's report providing that the outlying districts shall be authorized to make agreements only after such agreements are made in the central competitive field.

Western Pennsylvania, West Virginia and Ohio, having withdrawn, this leaves only Indiana and Illinois in the central field.

Operators here contend that mining and shipping conditions are so different in Indiana and Illinois as compared with central Pennsylvania, that a wage scale based on conditions there would be absolutely worthless here.

FAIRMONT

There is a better tone to the market and indications are that demand for storage purposes will increase. Railroads are taking larger stocks and inquiries are more plentiful all around. With the exception of prepared coals, prices are unchanged. Open-shop mines are, of course, more active than others with higher production costs.

Chicago and Midwest

Disappointing Market Shows Promise for Future

Weather and Strike Developments Leading Influences — Large Companies Advise Not Larger Than 60-Day Reserve—Improved Agricultural Conditions Presage Better Domestic Market.

MIDDLE Western markets are gaining strength but the demand is a day-to-day proposition, influenced largely by the weather and the trend of strike developments. There is every evidence of a stronger market in the near future, but to date the demand for coal has not measured up to expectations.

The feeling prevails that the miners are not in such a belligerent mood as their radical demands would indicate. Some of the larger coal companies are advising their customers against stocking more than a 60-day reserve supply of fuel.

Agricultural products are in better shape and this encouraging feature indicates a growing market for domestic coal. Better times for the farmers always favorably affect the coal industry in the Middle West.

The market is in fairly satisfactory shape, but is subject to some little fluctuation.

Conditions in the rural communities, where practically the majority of the domestic coal goes, is getting more favorable every day. The farmers are now getting more money for their crops. This very decided change for the better is going to make itself felt this summer in the coal market, as the farmers will have the ready money to stock their winter coal supply early and in addition, will have, probably, sufficient funds to buy quality coal rather than placing their purchases only for the cheapest fuels available, as has been the case for the last twelve months.

The steam coal market as yet, has not responded rapidly to the strike threat. The natural demand for steam coals is so slight, owing to the slump in manufacturing, that it is very freely predicted there will be no runaway prices between now and April 1. A great many factories are even refusing to stock any additional coal, believing they will be able to get all they want and at very reasonable prices, from non-union mines.

The opinion at this writing is that the miners are not in the belligerent frame of mind they would have us believe they are, and that Mr. Lewis and his lieutenants would welcome any sort of a reasonable settlement. They know enough of the economic condition of the country to realize they must take some decrease in pay, and while there was a lot of big talk in the convention about six-hour days and five days a week, this talk was mostly on the part of the radicals and irresponsible elements in the organization.

WESTERN KENTUCKY

There is a good demand for pea and slack for use in automatic stokers. Inside of two weeks the price of screenings has advanced from $1 to $2 a ton, even with the mine run price, and a little higher in some cases.

Operators are endeavoring to force mine run where they cannot supply screenings, but unfortunately very few industrial concerns have crushers. A few years ago several of the western Kentucky operators had crushers, but most of them were thrown out.

Of course there are not many times when screenings are worth as much or more than mine run, but such conditions will apply whenever the lump movement is light.

Retailers have stocks in hand to carry them for some time, even if there is a strike, due to the fact that the winter continues mild. There is no stocking demand expected until mid-summer. However, mine run is moving somewhat better.

ST. LOUIS

The St. Louis householder is not taking seriously the fact that there may be a shortage of coal this spring and summer. It is a hand to mouth existence for the retailer, and the average user is buying the cheapest coal. Here and there some better fuel may be found listed, but the retailer's business is not what it should be.

Larger dealers are storing steam sizes for their steam contracts, figuring on a 60-day supply. This has caused the steam market to pick up a little. Anthracite and smokeless, as well as coke, is almost at a standstill. Carload steam business is also slow.

Country domestic business has dropped off and the situation is one that is very unsatisfactory and unexpected.

SOUTHERN ILLINOIS

There has been some extra movement of all sizes from the Carterville field the past week, but it was not in the volume that was anticipated. Many mines have suspended operations entirely.

Domestic movement has been light. Dealers are not storing as they are not sure that the public will buy heavily enough to justify any great domestic storage.

The break in domestic prices of the association operators was promptly followed by all others, and the independents who had been selling domestic at $3.25@$3.75 promptly got down to $3, with $3.35@$3.50 as the high point. Steam plants could buy coal much cheaper than these quotations, depending upon the volume.

The price situation in the Duquoin field, as well as that of Jackson County, is somewhat similar to the independent conditions in the Carterville field. Working time, however, is unusually poor. The Mt. Olive situation has shown some little improvement in the amount of railroad coal moving, although domestic tonnage seems to have weakened in price.

The Standard situation seems to be getting worse. A little storage coal is moving, but not enough to make any great impression, outside of the railroad tonnage. Mines are getting an average of three days a week—those that are working. Everything is hard to move, although screenings have picked up in the last few days.

LOUISVILLE

Field conditions are improving steadily, there being a very fair demand for steam coal, but there have been cancellations of prepared sizes, which is making it hard for operators to fill some orders taken for screenings.

Rapid advance of western Kentucky steam coal has resulted in the price now being so high that eastern Kentucky screenings on a higher freight rate can enter the local market in competition.

If a strike does not develop a very slow market is in prospect in the spring as a result of recent stocking by industries. The Lake demand is about the only thing in sight for spring if the strike does not work out.

Some of the large industrial consumers, such as brick, lime, cement and similar manufacturers do not believe that a strike will materialize, and are not planning to have more than a 30-day supply of coal on hand April 1. However, as prices now are very low, and there is not much prospect of reduction in freight rates this does not appear to be a very safe policy, especially as demand for all building supplies is picking up, and promises to be heavy through the summer.

CHICAGO

Some warm weather put a temporary stop to a market which promises to become active as April 1 draws near. The warm weather had an instantaneous effect on the market, but luckily some seasonable cold weather came along in the shape of a blizzard from the Northwest, which put the market once more in a satisfactory condition.

The steam market is getting along in fairly good shape. Some stocking is going on but not in the volume expected. Buyers of industrial coal are taking into consideration the fact that freight rates will probably be reduced some time this spring or early in the summer, and consequently, even if the strike lasts a long time, they do not want to have big storage piles paid for on the present wage scale basis, in addition to the present high freight rates. Another factor of no small influence is the high tonnage of non-union coal which is moving into Chicago and which undoubtedly will continue to move in during the strike.

Domestic coals are not as strong as they should be. The recent cut of 40c. a ton has practically no influence as yet on the market. Dealers claim that they can buy all the smokeless mine run they want, at $1.75 a ton, current price, and $2, contract price. We have even heard rumors of some contracts being closed as low at $1.75. On very cold days the local yards are flooded with orders and peddlers with wagons, whereas in contrast to this, on warm days the yards of the retail trade are in a state of complete stagnation.

The householder is not worried a bit over the prospects of a strike. Some time between now and April 1 he will probably buy a few tons to tide him over the chilly spring days, but there will be no rush for coal, nor in our opinion, will there be any great advance in prices on domestic coal from the non-union fields.

High-grade Illinois and Indiana coals for domestic purposes are moving only sluggishly. Kentucky and West Virginia coals are a little brisker, principally because the retail dealers are trying to make a connection today which will stand them in good stead in case the strike lasts longer than is anticipated. The movement of West Virginia smokeless is fairly heavy, principally on account of the attractive prices at which this coal is being offered.

INDIANAPOLIS

Uncertainty as to just what may be done between now and April 1 regarding a settlement of wage differences has begun to have some bearing on the local coal situation. The market is rather flighty. During the past week there has been a slight increase in demand for steam coal. This is due somewhat to the increase in industrial production, but for the most part to the fact that most industrial consumers are up in the air as to what may happen.

South

BIRMINGHAM

Commercial and domestic markets have undergone no improvement in the past week. Steam buying is light and confined to spot channels, there being no change in the general policy which consumers have been following for many months.

Most of the rail lines are taking an increased allotment on their contracts and are accumulating sufficient quantity above current needs to enable stocking to some extent. This principally accounts for the boost in production and movement which has been gradual through the first three weeks of February.

Specifications for the fuel requirements of the Louisville & Nashville and the Frisco lines for the year beginning April 1 are expected by local distributors and producers shortly.

Moderate weather conditions have slowed down the domestic demand. Dealers as a rule still have considerable stocks on hand and are buying little.

Mine quotations are as follows:

	Lump and Nut	Washed
Carbon Hill	$3.00	$1.17@2.00
Cahaba	$3.75@4.50	2.00@2.25
Black Creek	3.75@4.50	2.00@2.25
Corona	3.00	2.00@2.25

VIRGINIA

Production is up and down, with 50 per cent of capacity as the minimum. Some business is coming in as the result of preparation for a strike. C. C. & O. mines continue to lead all others in points of production. Lump is $3@$3.50, mine run $2@$2.25, with slack not far behind.

Northwest

Blizzard Helps Orders But Hampers Deliveries

Rush Orders Reveal Hand-to-Mouth Buying by Consumers—Certainty of Strike Affects Market, as Danger to Reserves Is Realized.

DELIVERIES were greatly hampered by a severe blizzard last week. The storm brought with it a number of rush orders, which were slow in being filled owing to loading and transportation difficulties. The insistence of buyers on prompt delivery indicates to what extent consumers are running on a hand-to-mouth basis. The certainty of a strike is now having some effect on the market, as the feeling is beginning to prevail that a prolonged tie-up might endanger reserves despite the good supply now on docks.

Screenings are scarce all around and rail shippers are making concessions on domestic grades to enable them to meet the fine-coal demands.

DULUTH

Blockades in shipments, because of heavy snow conditions are menacing Northwest markets. Last week many cases of delayed shipments were reported to Duluth-Superior docks.

The situation is known to be serious in North Dakota, and it is probable that the blizzard may tie up things indefinitely.

Screenings are of paramount interest in the price field. They are still gaining strength, and show a steady price climb. This writing finds Youghiogheny, Splint and Fairmont screenings at $4.50, with some docks demanding $4.75. Hocking screenings are 25c. below this mark. It is probable that further advances will take place within a few days. Prices on lump and run of pile, while firmer, remain the same.

Some public utilities are suffering for coal, it is reported, and will feel any continued rail tie-up keenly. These of course are ordering frantically and several orders from the southern part of the state from manufacturing concerns are likewise helping to brighten the bituminous market. The Iron Ranges are dead, and what little life was reported there seems to have flickered out.

MINNEAPOLIS

Since the strike in the coal mines it has become as assured as anything can be prior to consummation, the steam trade and retailers of the Northwest are awakening to the fact that they may have a share in the general experience attendant thereon. If the strike shall be prolonged, as it may, for several months, the chances are that the supply will be none too much.

What to do now before the stress of the market becomes pronounced, is puzzling buyers. They do not want to buy in advance of reasonable needs. Neither do they wish to be caught unprepared in the event of a prolonged cessation of mining. Buying storage coal in the late winter and early spring is attended with the possibility of it being carried for some time.

The commercial situation adds to the confusion. Manufacturing and commerce have been slow for a long time, and still continue so. Any early improvement is far from assured. Many do not expect any great change in the situation and to meet the uncertainties is a hard task.

For the present, there seems to be somewhat more buying. The weather has been such as to call for steady consumption for some time past. The recent severe storm has crippled deliveries. Even with the backwardness of buying, stocks have been run down and have had to be replenished in some degree. In spite of the hope of a reduction of costs, the buyers know that freights will not be cut without notice, and that mining costs will not drop with a strike pending.

Prices are getting firmer right along. The lowest figures have been advanced, and the 50c. raise made by one or two companies a short time ago has been made by some others. It is probable that there will be further advances for the efforts to dispose of coal during the winter resulted in some very low figures which are not justified on the cost laid down and the operating costs.

MILWAUKEE

Dealers were kept reasonably busy throughout February. While the volume of business was not as great as normally, the demand was sufficient to keep delivery systems busy.

Prices are held firmly. There has been some cutting on the quiet, but a growing scarcity of screenings has put an end to this practice. Illinois and Indiana screened coal is being pushed to stimulate production of screenings, and this necessity opens up a temptation to shade the prices of screened grades. Milwaukee dock men have circularized their customers to the effect that screenings are growing scarce, and that they must prepare to use higher priced coal. The steam demand from the country is picking up.

All the floating cargoes in the harbor have been docked, the last boat going under the unloading bridges last week. There were eleven cargoes in all, aggregating about 80,000 tons, equally divided between hard and soft coal.

New England

Reserves Provided for New England Market Softens

Light Consumption and Industrial Calm Presage Long Period of Dullness—Promise of Non-Union Coal in Plenty Restores Consumer's Confidence.

New England buyers are less interested than two weeks ago. Reserves have been largely provided for and the market has quieted down. Light consumption and few industrial bright spots indicate a long spell of slow business. The textile strike has further reduced the demand for fuel. Business done is in small lots and the average consumer feels that there is no further need to safeguard his reserve stocks, especially as the supply of non-union coal promises to be good and easily available.

Marine freights have softened from the recent advance. All-rail shippers are a trifle more active where temporary wage agreements permit producers to again approach a competitive basis with the water-borne coals.

The textile strike here is one feature of the situation that causes anxiety. In the smaller towns where the unions are not strong the mill-workers have accepted the reduced wages, leaving to the better organized hands in Manchester, N. H., and Lowell, Mass., the effort to force mill-owners to continue the former wage scale. Meanwhile, most of the plants affected have ample stocks of coal and there will be little buying from that quarter until the issue is decided.

Heavy accumulations are the rule at the Hampton Roads piers. Part of this condition is due to non-arrival of bottoms because of adverse weather, but the prime factor is of course the draggy market. Several of the agencies are paying heavily for car service while others are selling where they can at prices calculated to move the coal. It is clear that the region will have to operate under heavy curtailment for the present, although a fair demand is reported along the line and to the West.

At rehandling points like Providence, Boston, and Portland there is moderate spot demand, but prices have eased off somewhat from the $6.25@$6.50 range that prevailed during most of February.

Marine freights have already begun to decline, although not more than 10c. to Boston has as yet been conceded. Large barges that were being chartered at $1.35 a week or more ago are now offering at $1.25. There are too many steamers available on dollar freights to warrant a figure much over that.

In no direction is there more than a very quiet demand for the Pennsylvania grades. A few operators who were obliged all fall and winter to maintain what they considered a minimum price because of wage scale have now been able to reach some temporary arrangement with labor that will permit naming a more nearly competitive basis.

News Items From Field and Trade

ALABAMA

An advisory committee, which will assist in working out the program of investigations at the Southern Experiment Station at Tuscaloosa, has been selected as follows: **C. E. Abbott,** Tennessee Coal, Iron & Railroad Co.; **C. E. Bowron,** Gulf States Steel Co.; **W. M. Lacey,** Woodward Iron Co.; **W. J. Penhallegon,** Republic Iron & Steel Co.; **J. E. Strong,** The Alabama Co.; **H. J. Thomas,** Sloss-Sheffield Steel & Iron Co.

CALIFORNIA

Sealed proposals for furnishing 3,000 tons of coal, to be delivered during the balance of the fiscal year ending June 30, 1922, to Fort D. A. Russell, Wyo., will be opened by the San Francisco General Intermediate Depot, Q. M. Section, Ft. Mason, on March 6.

CONNECTICUT

Roderick C. McNeil, of the McNeil Terminal Co., wholesale and retail coal and coke dealers, Bridgeport, has recently been chosen president and treasurer of the Connecticut Sand & Gravel Co.

The William B. Bristol Coal Co., Ansonia, and Derby, recently filed papers for dissolution of the company. All claims should be sent to Herbert L. Bristol, Mechanics St., Ansonia.

ILLINOIS

The mine of the **Perrine Coal Co.,** at Ward, has been closed down and the two shafts sealed in an effort to smother a fire which gained such headway as to block all attempts of rescue teams to save the mine from disaster. Rescue teams from Duquoin and other surrounding towns worked for two days combating the flames with no results. The mine will be kept sealed and under state supervision until the flames have been smothered.

The Central Illinois Public Utilities Co., which is in control of all the public utility plants in the southern Illinois mining fields, has, it is understood, taken option on several thousand acres of land on the Mississippi River near Grand Tower for the purpose of building a dam on the order of the one at Keokuk. This plant will be supplemented by one or two boosting stations in the coal fields, such as the one now at Harrisburg, to take care of the peak loads.

The Missouri Pacific R.R. is storing approximately 50,000 tons at Gorham. It is also understood that the Cotton Belt will store a couple of months' supply at Gorham. The Illinois Central has stored 800 cars of coal along the line northward from Carbondale and it is understood that this will be increased to about 3,000 cars previous to April 1. The Mobile & Ohio R.R. is keeping the usual storage supplies up and it is understood that arrangements are being made to take care of a supply at Cairo.

Albert J. Nason, president of the **Illinois Coal & Coke Co.,** was in Mt. Vernon recently and while there made the announcement that his company was almost ready to begin operations on the sinking and construction of the new mine in Jefferson County. Plans were completed for the mine over a year ago but owing to unfavorable conditions, development was postponed until a more opportune time.

The J. H. Weil Coal Co., of Chicago, announces that **C. F. Kempf** has joined its ranks in the capacity of secretary. He was for some time with the Illinois & Indiana Coal Corporation, with mines in southern Illinois.

The holdings and property of the mine of the **Kanawha Fuel Co.,** at Duquoin, are being sold by auction. The funds will go to pay off a debt owed to former employes of the concern. Main offices are located in Milwaukee.

Alexander M. Crawford announces that he is issuing acceptances to purchase several thousand acres of coal land in the vicinity of Carpenter in the north end of Madison County, lying several miles northeast of Edwardsville. Title to the land will be taken in the name of Alexander M. Crawford, trustee, who is holding it for some Eastern investor.

The Niantic Mine at Niantic has been closed for an indefinite period.

C. J. Nelson has been appointed general agent of the Chicago, Burlington & Quincy R.R. with headquarters at Herrin. He will give particular attention to matters pertaining to coal traffic.

INDIANA

The assessment of the Diamond Coal Co., Evansville, was raised recently by the **Indiana State Tax Board** from $41,790 to $48,340. No change was made in the assessment of the Bosse Coal Co., the John Archbold Coal Co., the Crescent Coal Co., the Key Coal Co., the Possum Ridge Coal Co., the Sunnyside Coal Co., or the J. Woolley Coal Co.

The Nash Mining Co., has been organized at Muncie. The company is capitalized at $10,000. Alexander McKnight, F. A. Graham, R. H. Munshower, L. G. Lewis, A. A. Bibler, J. F. Warner, E. J. Miltenberger, J. F. Hildebrand, J. A. Jackson and G. P. Davis are interested.

As a result of 300 miners going out on an unauthorized strike recently at the **Pine Ridge Mine** at Terre Haute, the mine was idle for a few days. According to the miners' committee, the owners endeavored to impose new working conditions on the drivers. It is understood that the matter will be taken up by the board of District No. 11.

Appointment of a receiver for the **Gill Coal Co.,** of Marion, is asked by three petitioners in a suit filed in the Grant Circuit Court. The petitioners are partners in the **Consumers' Coal Co.,** of Kokomo. The petitioners alleged the Gill company is in imminent danger of insolvency and owes numerous creditors who are threatening to bring suit.

Between 350 and 400 miners escaped death in the **Big Vein Coal Co.** mine at Princeton when the shaft recently caved in. Thirty-five mules are imprisoned in the mine. The miners escaped by the air shaft. The damage is estimated at $10,000. The company has its headquarters at Terre Haute and it is said that a new shaft will be built immediately.

KENTUCKY

The Louisville & Nashville R.R. has filed suit against the **Frankel Coal Co.** for $122.20 on an account.

The Sherwin Coal & Coke Co., has been incorporated at Madisonville, capital $20,000, by E. D. Sherwin, Chicago; Brent Hart and Maurice K. Gordon, Madisonville.

In the Circuit Court, a jury has returned a verdict of $13,000 in favor of **James R. Barnett** against the **Southland Coal Co.,** for alleged removal of coal under plaintiff's property near Henderson. The case will be appealed to the Court of Appeals.

Further news has been received concerning prospects of revived traffic on the Ohio River. **The Louisville & Cincinnati Packet Co.,** has announced that contracts have been let for two boats, 285 x 82 ft., to carry 1,500 tons of freight each, and have accommodations for 300 persons each. It is planned to run them from Cincinnati to New Orleans, picking up business from Pittsburgh and upper Ohio River points with small boats and shifting freight at Cincinnati for down-river movement.

It is reported from eastern Kentucky that the **Kentucky & West Virginia Power Co.,** is planning a high-tension line from its Tug River plant to Betsey Lane, where a substation will furnish power to various mining operations, and where it plans eventually to install a power plant when consumption in the district warrants such action.

The Consolidation Coal Co., operating at Jenkins and McRoberts in Letcher County has purchased a large tract of coal and timber lands lying along the Clay-Knox border on the main line of the Cumberland & Manchester R.R. at a consideration said to exceed $500,000. Some of the properties are under development. Most of the property can be reached by the Cumberland & Manchester road, but it is expected that a short line branch or so will be necessary.

MASSACHUSETTS

The Pomeroy Coal & Wood Co., Chicopee, is having plans prepared for a reinforced concrete coal pocket and bunker at the plant in that city. It will have a capacity of five hundred tons. Geo. P. Dion, 30 Center St., Chicopee, is the engineer.

The Home City Coal Co., Springfield, was recently incorporated. The capital stock is $50,000. L. B. Phinney, Boston, is president-treasurer.

MICHIGAN

Chicago and Milwaukee interests have organized a $350,000 company, to be known as the **Peoples Coal Mining Co.,** to succeed the **Albion Mining Co.,** for working the bituminous mines in the vicinity of Albion. The Peoples company is putting in tipples, pumps, hoists and motors and is extending a high-tension line from Albion.

MISSOURI

Frank F. Tirre, until recently general manager of the North Breese Coal & Mining Co.'s mines at Breese, Ill., has accepted a position with the Coal Service Bureau of St. Louis as commissioner.

The corporate name of the **Medart Patent Pulley Co.** has been changed to **The Medart Co.** The firm manufactures power transmission machinery. Walter R. Medart is president and treasurer.

NEW YORK

J. C. Sullivan, extensively interested in mining properties in southern West Virginia, attended a meeting of smokeless operators in New York recently.

A. J. King, of Huntington, extensively interested in smokeless properties in southern West Virginia was a visitor in New York early in February.

E. C. Minter, one of the well-known operators of the Winding Gulf region of West Virginia was in New York for the meeting of the smokeless operators' association.

George J. Mechau, long connected with the Buffalo bituminous trade, has been appointed Northern sales manager of the Lake Erie Coal Co., Buffalo, with office in the Prudential Bldg.

OHIO

Efforts are being made by interested people to raise the receivership of the **Allied Power Industries,** a Columbus trust estate, which was thrown into the hands of Barton Griffith, Sr., as receiver about a month ago. A number of the interest holders were trying to raise a sum of about $75,000 but so far no announcement has been forthcoming. The concern or estate has large coal properties in Tuscarawas County both by lease and in fee simple. Other assets consists of the McDonald patent in making atomized fuel.

Upon application of **W. H. Warner & Co.,** Cleveland, **H. W. Jenkins Coal Co., J. M. Taylor Coal Co.,** and the **Gibraltar Coal & Coke Co.,** all of Columbus, a receiver has been named for the **Elk Coal & Coke Co.,** Columbus. D. W. Jones is president of the company. The liabilities as listed amount to $12,983. No appraisal of the assets has been made.

In the U. S. Court at Cincinnati Judge Peck has dismissed the suit of the **Big Run Coal Co.** against the **Matthew Addy Co.** for an allowance of $16,000, said to be due as damages and a reformation of an open contract. The judge held that the Big Run company failed to come into court "with clean hands" for it was shown that two contracts were alleged to exist—one that called for deliveries at $2.50 a ton, the then Government price, and another which allowed the president of the Big Run company 7½c. a ton on the coal that was delivered to the Cincinnati concern.

John E. Luchte, Cincinnati retail man, listed $28,000 as his liabilities and $18,332 as his assets in a schedule of bankruptcy filed in the U. S. District Court at Cincinnati. Of this amounts due $16,000 is secured by mortgages. One coal firm appears among the unsecured creditors—the **H. P. Blum Coal Co.**

O. W. Gardner, Clinton DeWitt, and **Major Alfred Percy** of the Chesapeake & Virginia Coal Co., of Lynchburg, and G. H. Reeves, of Minneapolis, were in Cincinnati recently, attending the annual meeting of the Reeves Coal & Dock Co., of Superior, Wis.

A large coal deal was closed recently when the **Cambridge Collieries Co.** purchased the mine at Senacaville, from the **Morris Coal Co.**, together with about 8,000 acres of coal lands. The mine has been operating on part time and has a large, modern plant.

The Kensington Coal Co., Youngstown, has been chartered with a capital of $25,000 to sell coal both at wholesale and retail. Among the incorporators are T. W. Miller and F. A. Miller.

C. M. Moderwell & Co., which recently took over the Cincinnati office of the Thomas N. Mordue Co., closed March 1. E. A. Sprean, who had been in charge has moved to Indianapolis, where a branch of the Moderwell corporation is being opened

PENNSYLVANIA

Workings in the Dunmore No. 2 vein of the National Mine of the **Glen Alden Coal Co.** in South Scranton—the vein in which the fatal squeeze occurred on Jan. 13, killing four men—were explored recently by the commission of mining engineers engaged by the city to make an investigation of conditions in the mine.

Directors of the Etna Connellsville Coke Co. recently elected the following officers: President, **Joseph B. Echard**; vice-president, **D. M. Parkhill**; treasurer, **James B. Millard**; secretary, **George W. Campbell.**

The following officers and salesmen of **W. H. Bradford & Co., Inc.**, were guests of J. C. Haddock, president, **Haddock Fuel Corporation,** at Wilkes-Barre recently, spending a day visiting different Haddock operations: R. R. Reutlinger, L. G. McCrum, B. W. K. Edmons, W. P. Langford, G. N. Eck, C. M. Hetfield and W. F. Hanna.

Work in the coke region and vicinity seems to be picking up a little. **The H. C. Frick Coke Co.**, is firing some ovens at Hecla No. 1 and Colonial No. 3 plants. **The Century Coke Co.**, has fired 36 of its 205 ovens and will ship a little coal, at the plant near Brownsville, on the Monongahela. This plant has been idle for over a year. **The Vesta Coal Co.**, a subsidiary of the Jones & Laughlin Steel Co., has started to run full at the Nos. 4 and 6 mines, which have been running half time or less for several months. These are union mines on the Pennsylvania and on the Monongahela River on the edge of the non-union coke region.

At the annual meeting of the mining section of the **Engineers' Society of Western Pennsylvania,** at their rooms in the William Penn Hotel, Pittsburgh, a few days ago, the following directors were elected: W. A. Weldin, chairman; H. N. Eavenson, vice-chairman; E. H. Coxe, J. O. Durkee, R. R. Hice, J. R. Elliott and R. W. McCasland.

About 150 miners employed by the **Conemaugh Coal Mining Co.** at Park Hill, near Johnstown, who went on strike as a protest against a cut in wages, have returned to work, having come to an amicable understanding.

The Navy Smokeless Coal Co., with mines at Carrolltown Road, northern Cambria County, has secured an order for 150,000 tons of coal, delivery to start on March 1. The order was secured in Philadelphia, the purchaser not being made known. Representatives of the company, including John H. Cooney, T. Stanton Davis, Walter Jones and Superintendent W. E. Schiffer, closed negotiations while in Philadelphia recently. This, with other contracts, means two years' steady work for the mines of the company.

Coal companies incorporated recently at the State Department at Harrisburg were: **Kramer Coal Co.**, mining coal and manufacturing coke, Connellsville; capital stock, $25,000. The incorporators are K. K. Kramer, treasurer, and J. M. Gray and A. C. Herwick, all of Connellsville. **Coal Run Coal & Coke Co.**, buying and dealing in coal and the manufacture of coke; Butler capital stock, $60,000; treasurer, Edgar H. Neagley, Butler. Incorporators: Edward C. Grohman, A. Frederick Keck and Elmer W. Schenck, Butler.

The new anthracite breaker of the **Lehigh Coal & Navigation Co.**, at Coaldale, will be ready for use April 1. It cost $1,000,000. Fireproof, the building contains 2,500 tons of steel and 50,000 square feet of concrete floor. A 500-horsepower motor will operate the machinery.

Officials of the mining course at the Pennsylvania State College, have instituted a branch school at Kulpmont, Pa., in charge of a competent mining engineer. The sessions will be held in the Kulpmont school building each Monday and Friday nights.

The annual banquet of the Pottsville Y. M. C. A. was held last month. The Y. M. C. A. is particularly interesting to the anthracite coal industry as it is under the direction of this organization that the Natalie Community work is being carried on. At the banquet there were a large number of coal officials together with men interested in the anthracite industry.

In a case in which the **Hudson Coal Co.** is the defendant, the compensation board grants a hearing de novo in which Sophia Trella, of Mayfield, is the claimant. The claimant appealed from the disallowance of compensation by Referee Beemer, District No. 3, and the board holds the referee has neglected to find certain material facts. At the hearing, the time and place of which will be subsequently fixed, either party will be permitted to offer any additional testimony they may have.

A new hearing has been granted by the compensation board in the case of Mrs. John Richards, Alden, against the **Alden Coal Co.**, Wilkes-Barre. This is an appeal by the defendant from an award by Referee Lewis, District No. 9, and the board sets aside the findings of fact, the conclusions of law and the award.

In the case of Michael Efitsock, St. Clair, against the **Darkwater Coal Co.**, St. Clair, an appeal by the defendant from an award of compensation by Referee Seidel, District No. 2, the board upheld the referee and dismissed the appeal.

TEXAS

The Channel Fuel Co. has been organized at Houston, and charter filed with the secretary of state at Austin. The company will conduct a bunker coal business for ships calling at Houston. The capital stock of the company is $100,000 and the incorporators are: V. H. Bersodi, D. M. Picton and R. B. Walling, Jr.

Permit to do business in Texas has been granted the **Calvert Coal Co.** of Cumberland, Md. The company is capitalized at $25,000, and headquarters will be maintained at Rockdale, with John B. Robinson as state agent.

UTAH

Marriner Browning, chairman of the executive committee of the Lion Coal Co., Ogden, is to become general manager of the company, succeeding **D. H. Pape,** who resigned a short time ago. Mr. Browning has gone to Wyoming to visit the properties of the company. The Lion concern is one of the big companies of the mountain field.

The Peerless Coal Co., Salt Lake City, has donated five carloads of slack coal to the poor families of the city. The City may use the slack itself and with the money buy lump coal for those intended to benefit.

VIRGINIA

Charles E. Britt, of the Norfolk office of the West Virginia Coal Co., has been transferred to Newport News to take charge of the company's offices there. The Norfolk branch will be conducted as formerly, except that Mr. Britt's place will not be filled.

The Stribling Fuel Co., dealing in domestic coal, has entered a petition in bankruptcy in the Federal Court at Norfolk.

Captain H. G. Munden, general broker's agent, of Norfolk, has taken the position of Southern sales agent for the Leckie Coal Co., Inc., with offices in Norfolk.

The Willard-Sutherland Coal Co. has opened offices in Norfolk, in charge of Chester B. Koontz, well-known local coal broker.

WASHINGTON

The Crocker-Pearce Coal Co., Seattle, has been organized; capital, $100,000. Incorporators are Roy G. Crocker, W. E. Pearce and F. W. Dewart.

Settlement is near in the legal battle that has been waged for months between striking members of the United Mine Workers of America and the **Pacific Coast Coal Co.**, and smaller companies operating mines in King and Pierce counties over possession of cottages standing on the ground belonging to the companies in the various mining camps. The companies have made arrangements to purchase all cottages built on leased ground and occupied by strikers, and with the purchases completed the strikers will move out, and the eviction suits, 350 of which are pending, will be dropped.

Parties who recently visited the mine of the **Jordan Valley Coal Co.**, west of Granite Falls report that the outlook for success is very promising. A crew of men have been at work developing the company's holdings and have gone into the ground 500 ft. on one vein at which distance the coal is four feet thick and of a fine grade.

WASHINGTON, D. C.

Opposition to legislation restricting the rights of labor to strike or which seeks compulsory arbitration of labor disputes, is expressed in a petition to the House by the Tri-State District Convention of Districts 1, 7 and 9 of the United Mine Workers recently held at **Shamokin, Pa.**, representing anthracite miners.

The provision in the Interior Department appropriation bill exempting the Government fuel yard from the law requiring inspection and weighing of fuel was eliminated on suggestion of Representative Cramton, who said the Bureau of Mines and Comptroller were not in accord on the proposition. Representative Mann, Illinois, opposed the payment by the Government of 25c. for weighing each ton of coal received by the yard and suggested the employment of a man to weigh the coal.

Representative Bankhead, of Alabama, has introduced a bill appropriating $1,000,000 to be expended by agencies designated by the President in furnishing food, clothing and shelter to suffering coal miners and their families in Kentucky, West Virginia, Alabama, Ohio and Pennsylvania.

Indian Commissioner Burke, before the House Appropriations Committee, recommended that receipts from coal and other leases on Indian lands be not wholly given to the Indians to squander, but that it should be used in reimbursing the Government for public improvements provided in behalf of the Indians. He referred to coal leases in the Five Civilized Indian tribes.

A United States Civil-Service Examination will be held on March 22-23 for mineral geographic aid and assitant mineral geographer. Applicants should apply for Form 1312, stating the title of the examination desired.

WEST VIRGINIA

James H. McGrew and M. T. Sisley of Morgantown have been appointed receivers for the **Barbara Mining Co.**, operating a tract of 185 acres of Waynesburg coal in Monongalia County.

The miners at the Abrams Creek Mine of the **Brady Coal Corporation** on the Western Maryland Ry. in Mineral County, have returned to work on the March, 1917, wage scale.

Negotiations have been completed for the sale of an acreage of Pittsburg coal, located in Marion County, adjoining the coal recently purchased by the Bethlehem Steel Co., for approximately $500,000, with a total acreage of 728 acres. The purchaser was **John M. Jamison,** of Greensburg, Pa., president of the Jamison Coal & Coke Co.

J. F. Fredlock of the Fredlock-Trowbridge Co., operating in northern West Virginia has returned from a business trip to Chicago.

The following West Virginia coal concerns have recently increased their capital stock: **Delmar Coal Co.**, from $1,000,000 to $2,000,000; **Covel Smokeless Coal Co.**, from $200,000 to $300,000; **New Export Coal Co.**, from $100,000 to $125,000; **Coal River Collieries**, from $1,000,000 to $2,000,000; **Little War Creek Coal Co.**, from $500,000 to $750,000; **Elkhorn Piney Coal Mining Co.**, from $2,500,000 to $3,000,000; **Warfield Mining Co.**, from $100,000 to $200,000.

The Logan & Kanawha Coal Co., has been chartered with a capital of $100,000 to mine coal. Incorporators are Fred Legg, S. E. Legg, W. J. Donnelly, S. A. Stewart and E. P. Mosaham.

Possession of coal acreage containing Pittsburgh coal estimated to be worth $75,000 is at stake in a suit filed in the Circuit Court of Monongalia County by **Blake I. Bamage** of Morgantown, against the **South Penn Oil Co.** The defense claims that when the property was deeded there was a clause providing for the conveyance of "all oil, gas and other mineral rights and that manifestly such a conveyance included coal." On the other hand, the plaintiff claims that there was never any intention of conveying the coal rights. The tract involved is located at the head of Doll's Run.

Progress is being made by the **Bear Mountain Gas Coal Co.**, in the construction of a large tipple not far from Fairmont. It is being constructed under the supervision of W. A. Gadd of Morgantown, general superintendent of the Hess Coal & Coke Co.

The Superior Supply Co., of Bluefield, agent-jobber for the Westinghouse Company, announces the formation of a new machinery-engineering department under the management of **C. E. Lilley**, who was formerly connected with the Westinghouse company. As sales representative in the Pocahontas field, Mr. Lilley will be succeeded by **E. P. Adair**, while Mr. Adair's territory in the Clinch Valley and Williamson fields will be handled by **J. A. Hammond**, until recently a member of the Westinghouse organization.

NOVA SCOTIA

The Nova Scotia Steel & Coal Co., Ltd., intended to store 80,000 tons of coal if the miners would agree to the Gillen Arbitration award reducing their wages. The vote of 6,054 to 224 against accepting the award removes that possibility. A conference of the United Mine Workers in this district was held Feb. 23, at Truro.

ONTARIO

A recent visitor to the Toronto office of the Penn-Canadian Fuel Co., Toronto, was **William N. Rawson**, sales manager of the Loraine Coal & Dock Co., Cleveland.

Among the coal men form across the border who interviewed the Toronto coal trade recently were **Frank H. Howard**, of the Bellebridge Coal & Coke Co., Pittsburgh, and **C. L. Couch** of the Weaver Coal Co., Buffalo.

Traffic News

Green Bay coal distributors have petitioned the Wisconsin Railroad Commission for a readjustment of freight rates. They claim that for a distance of 200 miles in the state the consumer must pay freight from Milwaukee, although the coal may be purchased at docks nearer by. Milwaukee dealers hold that the present rates are not discriminatory, and that there is a tendency to restrict their field of competition.

In the complaint of the **Nevada Public Service Commission** the I. C. C. has decided that the rates on coal from the Castle Gate district in Utah and Rock Springs, Wyo., to points in Nevada are unreasonable. It prescribes that after April 22 the rates shall be as follows: To points between Tacoma and Tule on the Southern Pacific, and between Ola and Golconda on the Western Pacific $5.50 a ton; to Winnemucca $5.90; to points between Benin and Reno on the main line of the Southern Pacific and between Krum and Reno on the Western Pacific, $6.25; to McGill and intermediate points on the Nevada Northern $5.60 on lump coal and $4.60 on slack, run of mine and nut coal and to East Ely and points beyond on the Nevada Northern rates that exceed the foregoing rates to McGill by the amounts which the present rates to those points exceed the present rates to McGill.

The I. C. C. has reopened the complaint of the **Cameron Coal Co.**, in which an examiner recommended that the rates on coal from the Helper, Utah, coal mining district to California, Idaho, Montana, Oregon, Washington, Colorado, Kansas, Nebraska, Kansas City, St. Joseph and Council Bluffs were not unreasonable, in order to bring the record down to date.

The Peerless Coal Co., of Illinois, has asked the commission to rehear its case and decide that the rates on bituminous coal from its mines in the Springfield district to various points are unreasonable because they exceed the rates from Springfield.

The commission has denied the request of the **Mississippi Valley Iron Co.**, for rehearing of its case in which the rate on coke from St. Paul to St. Louis was held to be reasonable.

The I. C. C. has suspended until June proposed increased coal **rates from Virginia mines to points in South Carolina**, and assigned the case for hearing at Spartanburg, S. C., April 3. The suspended schedules propose to increase the rates from $3.56½ to $3.88 per ton on coal from mines on the Carolina, Clinchfield & Ohio Ry., the Interstate R.R., the N. & W., and the Norton & Northern Ry., in Virginia to destinations, including Stokes to Ehrhardts, S. C., on the Atlantic Coast Line and Lemon Spur to Ehrhardts on the Bamberg, Ehrhardts & Waterboro R.R.

In the complaint of the **Tuffli Bros. Pig Iron & Coke Co.**, the commission holds that rates on smithing coal from Douglas, W. Va., to points in Iowa, Nebraska and Wisconsin, and coke from Jamison, Pa., to Iowa and Wyoming are not unreasonable.

In dismissing the complaint of the **Romann & Bush Pig Iron & Coke Co.**, the commission decides that the rates on smithing coal from mines in Pennsylvania and West Virginia, sacked at St. Louis, and forwarded to points in Western territory, are not unreasonable.

J. T. Schatt, traffic manager, has filed a complaint with the Interstate Commerce Commission on behalf of the **United Paperboard Co.**, of New York City, against the G. & J. Ry., et al (Docket No. 13472) alleging unjust and unreasonable rates on anthracite from Delaware & Hudson mines in Pennsylvania to Thomson, N. Y., and asking just and reasonable rates and reparation.

In the complaint of the **Texas Steel Co.**, an examiner recommends that rates on coke from Potter, Okla., to Rusk, Tex., during Federal control were unreasonable because they exceeded $3.20 a ton.

Deciding the complaint of the **Nye, Schneider, Fowler Co.**, the commission rules that the rates on coal from points in Colorado, Wyoming, Kansas and Arkansas, to Iowa and Nebraska are not unnreasoable.

Rates on bituminous coal from mines in the Linton group in southwestern Indiana to points in Indiana northeast of Indianapolis during Federal control were not unreasonable, according to the commission's decision in the complaint of the **Union Traction Co.**, of Indiana.

The I. C. C. has directed the Utah Railway to refund $9,511 and the Director General of Railroads to refund $150 to the **Lion Coal Co.**, on account of unreasonable charges on coal shipped from its mines to various destinations.

The Iowa Board of Railroad Commissioners has handed down a decision in the coal rate hearing, in which the intrastate rates on soft coal are reduced approximately 18 per cent. The new rates will go into effect upon proper publication. The commission makes no change in the joint rates, their former order fixing 80 per cent of the local charges on shipments going over two or more lines remaining in effect.

The Algonquin Coal Co., has been authorized to intervene in the complaint of the **Smokeless Fuel Co.**, relating to demurrage charges on coal for transshipment by vessels at Norfolk and Lambert's Point, Va.

The commission has reopened the complaint of the **Fairmont & Cleveland Coal Co.**, in which it recently found that the practice of the railroads in distributing cars to complainants mines was unreasonable. Similar complaints of the **Bell & Zoller Coal Co.**, Chicago, and the **Vigo Mining Co.**, and others will be consolidated for argument.

An I. C. C. examiner has recommended in the complaint of the **International Harvester Co.**, that rates on bituminous coal from Farmington, Norris, Brereton, Dunfermline, St. David and Bryant, Ill., to Canton, Ill., are not unreasonable.

An examiner has recommended that the **division of joint rail and water rates** on coal from the Alabama field to Mobile and New Orleans for the performance of intermediate switching at Cordova, Ala., is not unreasonable.

The commission has decided that proposed reductions in interstate rates on coal from mines in the Springfield, Ill., district served by the Chicago & Alton, and from mines in the Southwestern field located in Missouri, Kansas, Oklahoma and Arkansas, to Kansas City, Mo., and Kansas and intermediate points are not justified.

Reduction of freight rates on coal was advocated before the I. C. C. in the rate investigation by the **National Association of Retail Clothiers.**

In the case involving intrastate rates in Illinois, the **Northern Illinois Coal Operators** have filed a petition with the I. C. C. for rehearing, to remove the alleged unjust discrimination in the rates on coal and to reduce them beyond the basis prescribed by the commission in its former ruling.

In the case involving rates on coal from Illinois mines to points in Arkansas, Louisiana and Texas, the **Alabama Mining Institute** has asked the commission to decide that the coal rates under suspension be not justified as they are preferential in favor of southern Illinois mines on the Missouri Pacific. The commission is asked to consider the relationships as between Alabama and western Kentucky, and southern Illinois. The Southern Ry., has also filed a brief in the case asking that all relationships be considered.

The I. C. C. has canceled argument in the complaint of the **Old Ben Coal Corporation**, which had been assigned for Jan. 30 at Washington.

A cut in the freight rate on coal from mines on the **Cumberland & Pennsylvania R.R.** for delivery in Cumberland, Md., from the present rate of $1.26 to 84c. per ton, has been announced.

Obituary

William C. Sargent for twenty-two years secretary and a director of Chain Belt Co., Milwaukee, died recently as a result of heart failure. He was seventy-three years of age and had been in ill health for several years.

B. S. Hammill, aged 56, a widely-known Pennsylvania coal operator, banker and business man, died recently in his winter home in Vero, Fla. Lately he had been operating mines at Stotts Station, on the Montour R.R. For the last several years he had also been head of the B. S. Hammill Co., with offices in Crafton, Pa., and engaged in the wholesale buying and selling of coal.

Publications Received

Coal in Eastern Idaho, by G. R. Mansfield. U. S. Geological Survey Bulletin 716-F. 30 pp. 2 maps.

Coal in the Middle and Eastern Parts of San Juan County, New Mexico, by C. M. Bauer and J. B. Reeside, Jr., U. S. Geological Survey Bulletin 716-G. 87 pp. 9 maps, 8 photographs. Many analyses and measured sections of the coal beds.

West Virginia Geological Survey, Nicholas County. By I. C. White and David B. Roger, Pp. 847; illustrations and tables.

Coming Meetings

New England Coal Dealers' Association will hold its annual meeting March 22 and 23 at Springfield, Mass. President, W. A. Clark, Milk St., Boston, Mass.

Northwestern Pennsylvania Coal Operators' Association will hold its annual meeting Tuesday, March 7, at the Wm. Penn Hotel, Pittsburgh, Pa. Secretary, T. F. Diefenderfer, Butler, Pa.

Society of Industrial Engineers will hold its national spring convention at the Hotel Statler, Detroit, Mich., April 26-28.

National Association of Purchasing Agents will hold its seventh annual convention at Exposition Park, Rochester, N. Y., May 13-20. Secretary, S. C. McLeod, 130 W. 42nd St., New York City.

National Foreign Trade Council will hold its annual meeting May 10-12 at Philadelphia, Pa.

Upper Potomac Coal Association will hold its annual meeting March 6 at Cumberland, Md. Secretary, J. F. Palmer, Cumberland, Md.

Mining Society of Nova Scotia will hold its annual meeting May 15, at Sydney, N. S., Canada. Secretary, E. C. Hanrahan, Sydney, N. S.

American Society for Testing Materials will hold its twenty-fifth annual meeting June 26 to July 1, 1922, at Atlantic City, N. J., with headquarters at the Chalfonte-Haddon Hall Hotel. Assistant treasurer, J. K. Rittenhouse, Engineers' Club Bldg., Philadelphia, Pa.